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A GUIDE TO OVER 1000 ARTICLES, PROJECTS AND ITEMS

Key to issues and volumes:
Vol. 1 Published by Martin Balk WB2SZW, Known as **A5 Magazine** Nineteen known issues. Issues market # are available in photo-copy form for $1.50 postpaid from WB0ESF Ralph Wilson, 4011 Clearview Drive, Cedar Falls, Iowa 50613.

Vol. 1 #	1	September	1967	7	September	1968	13	September	1969
#	2	November	1967	8	November	1968	14	November	1969
#	3	January	1968	9	January	1969	15	January	1970
#	4	March	1968	10	March	1969	16	March	1970
#	5	May	1968	11	May	1969	17	May	1970
#	6	July	1968	12	July	1969	18	July	1970
#							19	September	1970

Publishing Discontinued

Vol. 2, 3, & 4 published by Rn Cohen K3ZKO and Al Lipkin W3AEH. Known as **A5 Amateur Television Magazine.** Twelve known issues. All issues available in photo-copy form for $1.50 postpaid from WB0ESF, Ralph Wilson, Iowa.

Vol. 2 #	1	May	1972	Vol. 3	1	January	1973	Vol. 4	1	January	1974
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#	4	November	1972		4	July	1973				
#	4	November	1972		4	July	1973				
#					5	September	1973				
#					6	November	1973				

Publishing Discontinued

Vol. 5 to Vol. 11 No. 4 published by Henry B. Ruh KB9FO. Known as A5 Amateur Television Magazine with Thirty-four issues. All issues except Sept. 76 available in photo-copy form for $2 each from WB0ESF, Iowa. One special issue in August 1978 for WARC, otherwise, six issues per year. Format increase begins with January 1979 issue. Issues prior to January 1979 are 8.5 x 5.5, issues since January 1979 are 8. x 11. ($2.50 each from WB0ESF).

Vol. 5 #	1	January	1975	Vol. 6	1	January	1976	Vol. 7	1	January	1977
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#	4	July	1975		4	July	1976		4	July	1977
#	5	September	1975		5	September	1976		5	September	1977
#	6	November	1975		6	November	1976		6	November	1977

Vol. 8 #	1	January	1978	Vol. 9	1	January	1979	Vol. 10	1	January	1980
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#	3	May	1978		3	March	1979		3	March	1980
#	4	July	1978		4	July	1979		4	July	1980
#	5	August	1978		5	September	1979		5	September	1980
#	6	September	1978		6	November	1979		6	November	1980
#	7	November	1978								

Vol. 11, issue 5 begun publishing by new owner Mike Stone WB0QCD of Lowden, Iowa. Purchased actually in June 1981, the Magazine expanded its format to include other modes of specialized communications. With the March Issue, Vol. 12 No. 3 (there is no No. 2) monthly publication began 12 times per year.

Vol. 11 #	1	January	1981
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#	4	July	1981
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Vol. 12 #	1	January	1982*
#	3	March	1982*
#	4	April	1982
#	5	May	1982
#	6	June	1982
THRU #	12	DEC	1982

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Other activities: A5 has been active in FCC matters since the early 1970's including comments, petitions for rule making, and oral arguments on all amateur matters, participated for the entire five year period for WARC as an active member of the advisory committee, and continues to be present in Washington DC for all matters of importance to the **whole** amateur radio fraternity as well as matters of special interest to ATVers. It was A5 ATV Magazine the proposed and lobbied for what became F.C.C. Docket 80-252 for SSTV expansion into the general HF Bands February 22nd, 1981.

*WB0QCD bought publication rights and takeover of publishment.

A5 Amateur Television Magazine AND Amateur Television In A Nutshell are available from the **LIBRARY OF CONGRESS, WASHINGTON, D.C., MONROE COUNTY LIBRARY, BLOOMINGTON, IN.**

A5 ATV Magazine may be purchased from: Ham Radio Outlet, 2811 Telegraph Avenue, Oakland, CA 94609, Henry Radio, 11240 W. Olympic Blvd., Los Angeles, CA 90064, Robot Research, 7591 West Convoy Court, San Diego, CA 92111, Derrick Electronics, 714 West Kenosha, Broken Arrow, OK 74012, Amateur Radio Equipment Co., 1203 East Douglas, Wichita, KS 62711, ATV Research, 1300 N. Broadway, Dakota City, NB 68731, Spectronics, 1009 Garfield, Oak Park, IL 60304, Amateur Electronics Supply, 4828 West Fond du Lac Avenue, Milwaukee, WI 43216, Hoosier Electronics, 43B Meadows Shopping Center, Terra Haute, IN 47802, Silvernail Electronics, 14061 111th Terrace North, Largo, FL 33540, Ray's Amateur Radio, 1590 US Highway 19 South, Clearwater, FL 33516, Universal Amateur Radio Inc, 1280 Aida Drive, Reynoldsburg, OH 43068, Village Green Bookstore, 766 Monroe Avenue, Rochester, NY 14607, Ham Radio World Inc. Oneida County Airport-Terminal Bldg, Oriskany, NY 13424, Science Workshop, PO Box 393, Bethpage NY 11714.

Copies may also be obtained from A5 ATV Magazine "Foreign Reps." VE3BWW, VE6PW, DJ4GL, G8PTH, ZS6BTD, HK3DJV, ZL2FR and JA0BZC. Send $2.50 (US) and large SASE.

1984 YEAR END INDEX OF A5 ATV MAGAZINE™

January Volume 14 No.1

International Trade Agreement Reached, "A5" World News Roundup!, CQ FSTV, Is Anyone There? (ATV Basics), PREAMPS! PREAMPS! PREAMPS! W6SAI, 1296 and 902 Mhz. Microstrip Projects VE7RTV, Canadian ATV Activity Report!, 5000 BSA Scouts Visit VE6WSJ- VE6SL and VE6AMU, Tighten Video Error Tolerance, KB9FO, International Video Communications- WB2LLB/4, New "A5/USATVS" Group Buying Items, Avoidance Suppression of Terrestrial Interference (TVRO), Satellite-TV Master Program Guide, TVRO PART #19-Single Conversion Down Converter Revisited- WA6RDA, TV Video Frame Grabber Circuit (SSTV)- WA9EUN, ARRL President Vic Clark W4KFC Dead at 66, 1984 "A5" W.A.S. SSTV Contest Details!, SSTV "Worked All States" Map, W8MBD Sloscan Program Information, TRS80C Color FSTV "Marquee" Program!, AEA Computer Interface User Report- WB0MEW, A5/USATVS Computer BBS Compuserve Update, 1984 A5/USATVS Membership Questionaire. 40 Pages.

February Volume 14 No.2

"A5/USATVS" Mailbag, Space Shuttle on ATV, Signals From Space!- N5FPW, Realistic 33-985C Microphone for FSTV, ATV Group/Club "News"!, WA9NJR-TV is "On The Air!", Stripline Kilowatt Amp for 432, MHz- K2RIW, Mods for K2RIW Amp for FSTV!- WB0ZJP, A5/USATVS "P-Chart" New European Standard, Don Miller W9NTP Purchases Silvernail Electronics, New "Worldview" Facsimile Newsletter!- WD4MRJ, Using "Fax" On Predicting The Weather, New "SSTV On The Bands" Column W2WHK, New Generation ZL1LH SSTV Converter- VK3LM, Video Amp Driver Circuit for Computers- K2IUV, Ham-TV Programs for the TRS80C- WB0MEW, TRS80C Interfaces- "Which Way To Go?, QM Electronic TRS80C Interfaces- N7QM, "A5" Classified Ads! 40 Pages.

March Volume 14 No.3

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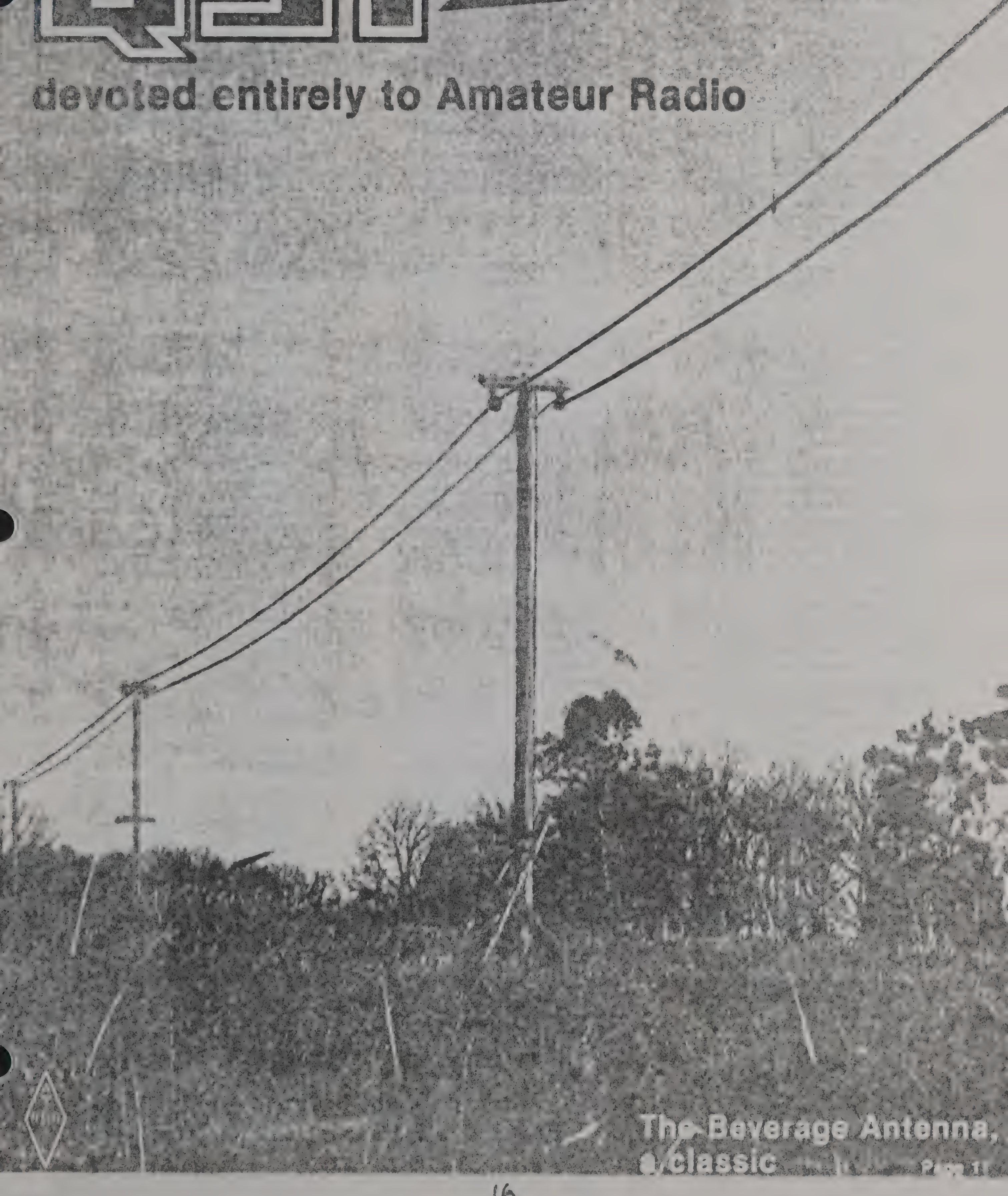

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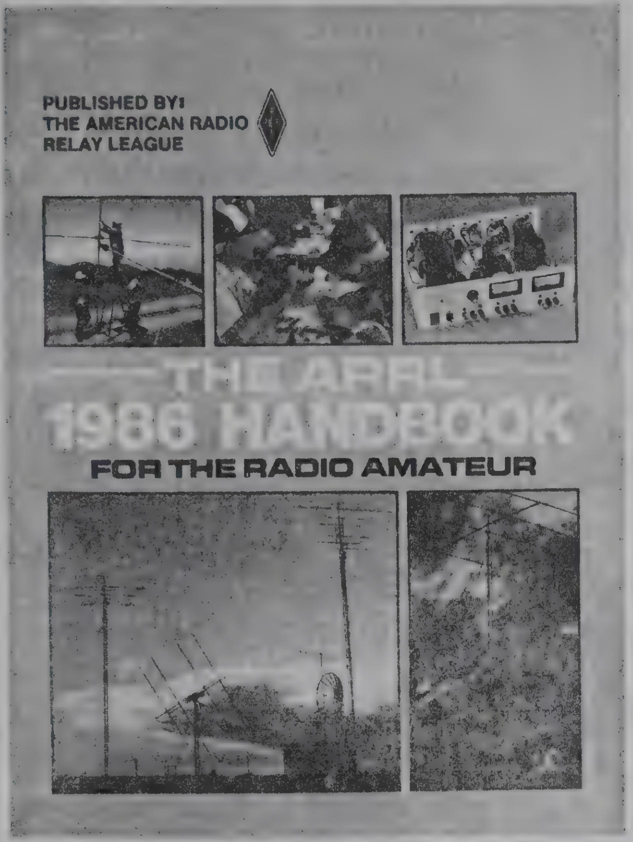

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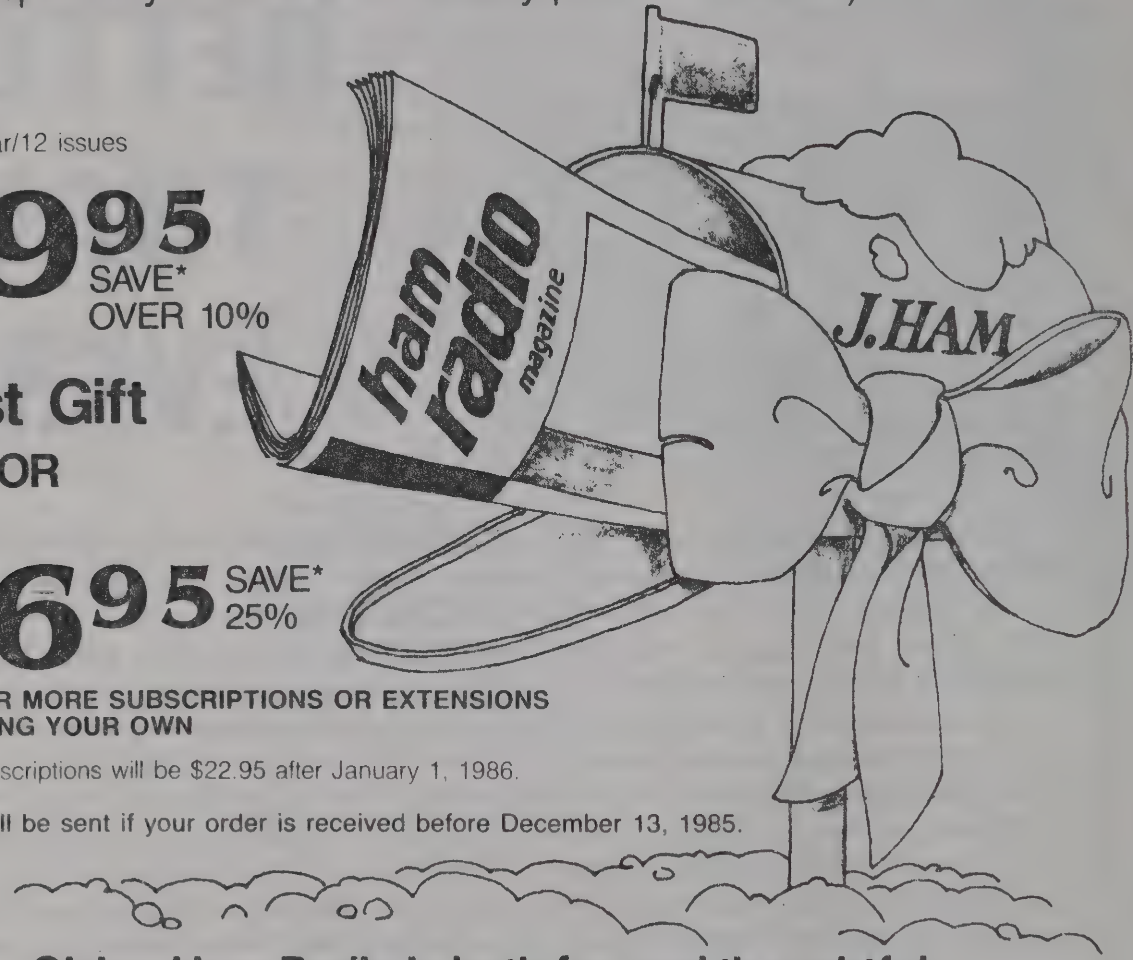

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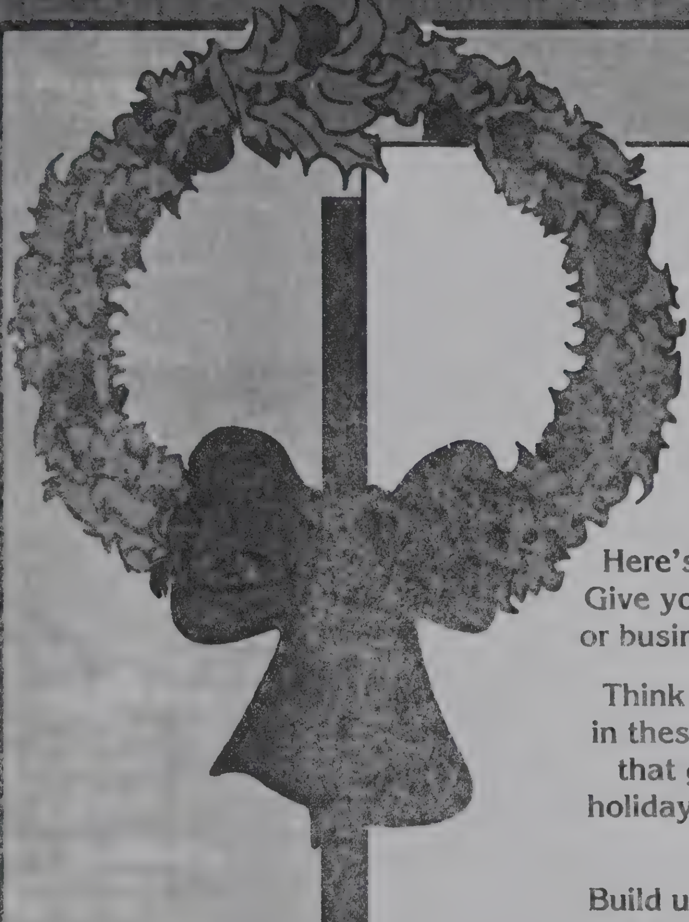

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What have you missed?

63

JUNE 63. Surplus Issue! DMQ-2 Beacon TX on 220; increasing ARC-2 transceiver selectivity; PE-97A power supply conversion, BC-348 band-spread; inductance tester; converting BC-230 TX; beginner's RX using BC-453; receiver motor-tuning; transistor CW monitor; BC-442 antenna relay conversion; mobile loading coils; increasing Two-er selectivity; TV with the ART-26 TX; TRC-8 RX on 220; ARC-5 HF RX & TX; ARC-3 TX on 2m.

AUG 63. Battery-op 6m station; diode noise generator; video modulation; magic T-R switch; antenna gain; halo mods; CW break-in; VEE beam design; coax losses; rf wattmeter; TX tube guide; diode power supply; "Lunchbox" squelch; swr explanation; vertical antenna info; info on Windom antenna.

OCT 63. W8FM transceiver ideas; HF propagation; cheap phone patch; remote-tuned yagi; construction hints; antenna coupler; $5 vertical; filament transformer construction; 2m nuvistor converter; Lafayette HE-35 mods; buyer's guide to RX & TX; product detector; novel converter; compact mike amplifier.

Available issues published from 1960-1963 are listed at the end of this catalogue.

64

FEB 64. 2m multichannel exciter; RX design ideas; magic t/r switch; loudspeaker enclosures; 40m 2 W TX; look at test equipment; radio grounds; 40m ZL special antenna; neutralization.

Available issues published from 1964 are listed at the end of this catalogue.

65

Available issues published from 1965 are listed at the end of this catalogue.

66

Available issues published from 1966 are listed at the end of this catalogue.

67

MAY 67. Quad Issue! 432 quad-quad-quad; expanded HF quad; two el quad; mini-quad; 40m quad; quad experiments; half-quad; three-el quad; quad bibliography; FET vfo; tube troubleshooting; HF dummy load; understanding "dB"; HF SSB/CW RX; geometric circuit design; GSB-201 transceive; FET converter for 10-20m; hi-pass RX filters.

JULY 67. VE ham radio; VE0 hams; DSB adaptor; home-brew tower; transistor design; '39 World's Fair; ground plane antenna; G4ZU beam; SSTV monitor; UHF FET preamps; IC "i-f" strip; vertical antenna; VHF/UHF dipper; tower hints; scope monitoring; operating desk; S-line cross-band; hi-school ham club; Heath HR-10 mods.

OCT 67. HF solid-state RX; rugged rotator; designing slug-tuned coils, FET converter; SSTV pix generator; VHF log-periodics; rotatable dipole; gamma-match cap; old-time DXing; modern DXing.

Available issues published from 1967 are listed at the end of this catalogue.

68

JUNE 68. Surplus Issue! transformer tricks; BC-1206 RX; APS-13 ATV TX; low-voltage dc supply; surplus scopes; FM rig commercial xtal types; Wilcox F-3 RX; restoring old equipment; 75A-1 RX mods; TRA 19 on 432; frequency counter uses; transceiver power supply; uses for cheap tape recorders; surplus conversion bibliography; RT-209 walkie on 2m; ARC-1 guard RX; RTTY TX TU.

JULY 68. Wooden tower construction; tilt-over towers; erecting a telephone pole; IC AF oscillator; "dB" explained; ham club tips (part 1).

SEPT 68. Mobile VHF; 432 FET preamps; converting TV tuners; xtal oscillation stability; parallel-tee design; moonbounce rhombic; 6m exciter (corrections Jan. 69); 6m transceiver (corrections Jan. 69); 2m DSB amp; ham club tips (part 3).

NOV 68. SSB xtal filters; solid-state troubleshooting; IC frequency counter (many errors & omissions); "CV" transformers; space communications odyssey; pulsar info; thin-wire antennas; 40m transistor CW TX/RX; BC 348M double conversion; multifunction tester; copper wire specs; thermistor applications; hi-voltage transistor list; ham club tips (part 5).

Available issues published from 1968 are listed at the end of this catalogue.

69

JAN 69. Suppressor compressor; HW 12 on 160; beam tuning; ac voltage control; 2m transistor TX; LC power reducer; spectrum analysis info; 6m transistor RX; operating console; RTTY autostart; calculating oscillation stability; low-power 40 CW TX; sequential relay switching; sightless operator's bridge; ham club tips (part 7).

FEB 69. SSTV camera mod for fast scan; tri-band linear; selective AF filter; unijunction transistor info; Nikola Tesla biography; mobile installation hints; Extra class license study (part 1).

MAR 69. Surplus issue: TCS TX mods; cheap compressor/amp; RXZ calculations; transistor keyer; better balanced modulator; transistor oscillators; using blowers; half-wave feedline info; surplus conversion bibliography; Extra class license study (part 2).

APR 69. 2-channel scope amp; RX preamp; Two-er PTT; variable dc load; swr bridge; 100 kHz marker gen.; some transistor specs; SB-610 monitorscope mods; portable 6m AM TX; 2m converter; Extra class license study (part 3).

MAY 69. 2m turnstile; 2m slot; RX attenuator; generator filter; short vee; quad tuning; using antennascope; measuring antenna gain; phone patch regs; swr indicator; 160m short verticals 15m antenna; HF propagation angles; FSK exciter; kW dummy load; hi-power linear; Extra class license study (part 4); all-band curtain array.

JUNE 69. Microwave power generation; 6m SSB TX; 432-er TX/RX; 6m converter; 2m 5/8 wave whip; UHF TV tuners ATV video modulator; UHF FET preamps; RTTY monitorscope; Extra class license study (part 5); building UHF cavities; mini-vee for 10-20m; VHF vfo.

JULY 69. AM modulator; SSTV signal generator; 6m kW linear; 432 kW amp; 432-34 TX/RX; 6m IC converter; radio-controlled models; RTTY IC TU; audio notch filter; VRC-19 conversion; tube substitution; 2m transistor exciter; Extra class license study (part 6); HF FET vfo.

AUG 69. FET regen for 3.5 MHz up; FM crystal switching; 5/8-wave vertical; introduction to ICs; RTTY tone generator; good/bad transistor checker; 2m AM TX; measure transistor Ft; 160m propagation; triac applications; simple i-f sweep generator; transistor keyer; SB-100 on 6m; xtal frequency measurement; Extra class license study (part 7); FM deviation meter; QRP AM 6m TX; circular quads; FM noise figure; transistor parameter tracer.

SEPT 69. Tunnel diode theory; magic tee; soldering techniques; wave-travel theory; cable shielding; transistor theory; AM noise limiter; AFSK generator transistor amp debugging; measure meter resistance; diode-stack power supply; transistor testing; 2½ W 6m TX; HX-10 neutralizing; capacitor usage; radio propagation; AM mod percentage; Extra class license study (part 8); 3-400Z linear; ATV vidicon camera; 2 transistor testers; FET compressor; rf plate choke.

OCT 69. Super-gain 40m antenna; FET chirper; telephone info; scope calibrator; thyrector surge protector; slower tuning rates; identify calibrator harmonics. FM adapter for AM TX; CB sets on 6m; proportional control xtal oven; xtal filter installation; Q-multiplier; transceiver power supply; Extra class study (part 9).

NOV 69. NCX-3 on 6m; i-f notch filters; dial calibration; HW-32A external vfo; 6m converter; feedline info; rf Z-bridge; FM mobile hints; umbrella antenna 432-34 TX (part 1); power supply tricks with diodes; transistor keyer; transistor bias design; xtal VHF signal generation; electronic variac; SB-33 mods; Extra class study (part 10); SB-34 linear improvements.

DEC 69. Transistor-diode checker; dummy load/attenuator; tuned filter chokes; band-switching Swan 250 & TV-2; 88 mH selectivity; math exercises; RTL xtal calibrator; transistor PA design; HV mobile p.s.; 1-10 GHz freqmeter; CB rig on 6m; Extra class license study (part 11); 1970 buyer's guide.

70

JAN 70. Transceiver accessory unit; bench power supply; SSTV color method; base-tuned center-loaded antenna; 6m bandpass filter; Extra class license study (part 12); rectifier diode usage; facsimile info.

FEB 70. 18-inch 15m dipole; 6m converter; high-density PC board; camper-mobile hints; 2m frequency synthesizer; encoding/decoding for repeaters; DX-35 mods; panoramic VHF RX; variable-Z HF mobile mount; Extra class license study (part 13); linear IC info; QRP 40m TX; IC Q-multiplier.

MAR 70. Gdo applications; charger for dry cells; FM frequency meter; PC board construction; ham FM standards; cheap rf wattmeter; multifreq FM oscillation; "i-f" system modules (part 1); Six-er mods; gdo dip lite; Motorola 41 V conversion; CW monitor; buying surplus logic; SSQ-23A sonobuoy conversion; GRC-9 RX/TX conversion; Extra class study (part 14); intro to VHF FM.

APR 70. Noise blanker; 2m hot carrier diode converter; repeater controller; understanding COR repeater; 7/8-wave 2m antenna; Extra class study (part 15); inexpensive semiconductors; renovating surplus meters; linear amp bias regulator; hi-performance i-f amp & agc system; SSB bfo for shortwave radio; vacuum-tube load box; general FM dope & repeater guide; meggering your antenna.

MAY 70. comments on "FM docket" #18803; future of CW; FM-AM RX aligner; 5/8-wave verticals; using 2m intelligently; auto burglar alarms; power supplies from surplus components; "i-f" system modules (part 2); VHF FET preamps; educated "idiot" lights; postage-stamp 6m TX; Extra class study (part 16); Bishop IFNL; low-band police monitor; mobile CW TX; Wichita autopatch.

JUNE 70. DDRR antenna; vfo circuit; remote swr indicator; indoor HF vertical; two RX on one antenna; environment & coax loss; 2-el trap verticals; buying surplus; two 40m QRP TX; 21 dB 2m beam; Extra class study (part 17).

JULY 70. Improved Color Slow-Scan Television; How to Build a Keyer; 450-MHz Mighty Mite—one-transistor superregenerative receiver; Cheapie 6-Meter Half-Gallon—use 811-As and be heard; A High-Performance Power Supply—using an IC voltage regulator; Latham Island DXpedition; Db to Power; Protection for Grid-Dipper Coil's; Mobile CW Receiver; QSLing . . . Ham Radio's Own Con Game.

SEPT 70. Integrated Circuit CW ID Generator; The Indication Oscillator—another dipper circuit, 1-400 MHz; Tuning VHF Receivers—clever infinite attenuator and oscillator unit; Repeater Antenna Separation; Diode Stacks; Deluxe Receiver Gain Control—using one transistor and a zener; Reed Relays for Coaxial Switching; Beer-Can Two Meter Coaxial Antenna; Converting 24 V Relays to 115 V ac; Versatile 2m MOSFET Converter—low noise, high gain, ultra stable.

NOV 70. Differential J-FET preamplifier; Remote Quad Tuning; Two-Watt Six Meter Transmitter—using the crystal-heterodyne vfo; Semiautomatic FM channel Scanning; Low-cost Automatic Keyer—an excellent "first project"; Ac Switching with Self-Powered ICs—clever zero voltage switch; Pioneer Radio on the Prairies—what it was like 45 years ago; SST-I Solid-State Transceiver for 40 Meters; A Low-Cost RF Wattmeter; Calibrate That Calibrator.

DEC 70. Solid-state VHF exciter; delta frequency control for SSB; 2m transistor FM TX; HW-100 offset tuning; "little gate" dipper; 3-500Z HF linear; General class study (part 5); "transi-test" (no good errors!); transistor p.s. current limiter.

Available issues published from 1970 are listed at the end of this catalogue.

71

JAN 71. Split phones for DXing; Heath Ten-er mods; CW duty cycle; repeater zero beater; HEP IC projects; 10-15-20m parabolic ideas; lightning protection, IC RX accessory; attic antennas; double-balanced mixers; permanent marker tool; ham license study questions.

FEB 71. metal locator; varactor theory; AFSK unit; SSTV patch box; ATV hints; RTTY tuning indicator; tone encoder/decoder; 220-MHz converter; SSTV magnetic deflection; IC code oscillator; 6m TX beeper; General class study (part 6); RTTY intro; perfboard terminal; low ohmmeter.

MAR 71. IC audio filter; IC 6m converter; trap vertical ideas; digital counter info; surplus equipment identification; HF linear; simple phone patch; repeater audio mixer; digital RTTY accessories; coat-hanger ground plane; General class study (part 7).

MAY 71. 75m mobile whip; 2m preamp; transistor amp design; 10m DSB TX; portable FM transceiver directory; audio compressor-clipper; transistor LM freqmeter; 450-MHz link TX; simple Af filter; 1-tube 2m transceiver; surplus 2m power amp; General class study (part 8).

JUNE 71. 2m beam experiments; 3-el 2m quad; multi-band dipole patterns; weather balloon vertical; pocket-pager squelch; Two-er vfo; tuning mobile whips; transistor power supply; capacity decade box; 40m gain antennas; General class study (part 9).

JULY 71. IC audio processor; audio signal generator; CW filter; 2m FM oscillator; 2m collinear vertical; FM supplier directory; Motorola G-strip conversion; transistor beta tester; General class study (part 10).

AUG 71. Ham facsimile (part 1); 500-Watt linear; dimensions for July collinear; 4-tube 80/40 station; vfo digital readout; Jupiter on 15m; General class study (part 11); pink ticket wave-meter.

SEPT 71. Transformerless power supplies; solid-state TV camera; IC substitution; two rf wattmeters; IC compressor-agc; multichannel HT-200; ham facsimile (part 2); causes of man-made noise; vfo with tracking mixer; General class study (part 12); transistor heatsinking; IC pulse generator; phone patch isolation; hcd wattmeters.

OCT 71. Emergency repeater COR; transceiver power supply; predicting meteor showers; digital switching; reverse-current battery charger; passive repeaters; earth grounds; audio "tailoring" filters; Swan 350 mods.

NOV 71. 3-el 75m beam; motor-tuned ground plane; 2m gain vertical; transistor biasing; split-site repeater; fox-hunting; audio filter; transistor/diode tester; xtal tester; 6m kW amp; 10-15-20m quad; transistor pi-net final; antenna feedline; communications dBs; 2300-MHz exciter.

DEC 71. Convert Your 7-MHz Cubical Quad to All Bands; The Indoor Quad; Getting to Know Tee Squared Ell; More Power From 6146s; Radio Direction/Range Finder; Morse Memory—30-letter memory for ident, contests, etc.; SCR Mobile Theft Alarm; DX QSOs or contacts; Code Shorthand; VHF Double Sideband.

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FEB 72. A Solid-State High Frequency Regenerative Receiver—el cheapo using one IC; Tips for Raising Your Code Speed to 20 WPM; Why Not Try QRP? VHF Dummy Load Wattmeter; CW DX On ½ Watt—enjoy QRP with this 1-Watt rig; 20-60 W 1-4 Band TX— two-tube CW transmitter; Quick and Easy PNP/NPN Transistor Sorter; Self-Contained Reflected Power and CW Monitor; Circuits, Circuits, Circuits; The Automatic Transmission Line Tuner.

MAY 72. Quick Band Change Mobile Antenna—with output indicator; How to Get the Stuff into the House; Anti-CW RTTY Autostart; A Modern VHF Frequency Counter—can be built for under $100; TV Sync Generator—using ICs; Radio Astronomy; Noise and Receiving Antennas; The Sewerpipe Antenna—2m FM, of course; Circuits, Circuits, Circuits; Simple Car Ammeter—all solid state.

JUNE 72. Six Elements on Twenty Meters—eliminate QRM; Slow Scan Television—basics; Active Filter Design and Use—all kinds of filters . . . Part I; Radio Astronomy for Amateurs (Part II); 20 dB Beams—design and construction of VHF antennas; Phasing Multiband Verticals—ten thru eighty meters; 300-MHz Frequency Scaler—extends frequency counters to VHF; Circuits Circuits, Circuits; RTTY Filters—elliptic function filters; Troubleshooting for the Novice.

JULY 72. Solid-State VHF Amplifier; The Phase-Locked Loop; VHF Converters; Add $15 T-Power; 1296-MHz Mixer; The VHF Specialists FM Amplifier; Meteor Shower DXing; Tone Decoder and Carrier Relay Circuits—using the 741 op amp; Flying Spot Scanner for SSTV—solid-state unit, simple, relatively; Active Filter Design, Part II.

AUG 72. SSTV intro; speech processor; FM repeater info; test probe construction; GE Progline ac supply; 432 rf testing; preamp compressor; Six-er mods; phone patch; Two-er info; solar info; SCR regulator for HVPS; "ideal" xtal oscillator; FM RX adapter; auto theft alarm.

SEPT 72. Plumbicon TV camera; WWVB 60-kHz RX; cigar tube signal generator; CW active filter; rf testing at 1296-3500 GHz; balun antenna feed; transistor power supply; IC 6m RX; IC FM/AM detector (part 2); active filter design (part 3); K2OAW frequency counter (part 3); 2m frequency synthesizer (part 1).

OCT 72. Corrections for Aug. FM RX adapter; 2m frequency synthesizer (part 2); 6m transistor vfo; nano-ampere meter; time-frequency measurement (part 1); active filter design (part 4); repeater timer; Extra class Q&A (part 3); balloon vertical; ID generator; time-delay relay; 432 filter ideas; dc-ac inverter; hc-diode converter; RTL decade and nixie driver; plus-minus supply for ICs.

NOV 72. HF transistor power amps; RTTY Selcal; IC trf RX transistor keyer; emergency power; 220-MHz preamp; double-delta antenna; simple converter using modules; HF rf tester; "lumped line" oscillator; 2m frequency synthesizer (part 3); K2OAW counter errata; 2m preamp; Extra class Q&A (part 4); hi-Z voltmeter; Nikola Tesla story; VHF swr meter; transistor regen RX; 432 SSB transverter; ac arc welder; intro to computers; hybrid AM modulator; HR-10 RX mods; 10m transistor AM TX; 40m ground plane; IC logic demonstrator; overload protection; i-f/rf sweep generator; digital frequency counter; aural TX tuning.

DEC 72. SSTV scope analyzer; 2m FM RX; tone burst encoder and decoder; universal i-f amp; autopatch hookup; LM380N info; voltage variable cap info; 2m 18-Watt amp; SSB modulation monitor; xtal freq/activity meter; 10 A var. dc supply; transmission line uses; radio astronomy; inductance meter; 75 to 20m transverter; LED info; 40m preamp; transistor vfo; 1972 index, 2m preamp.

73

JAN 73. HT-220 touchtone; 3-el 20m yagi; 50-MHz frequency counter; speech processor; 2-tone generator; FM test set; tilt-over tower; 2m converter using modules; tunable AF filter; six-band linear; 10m i-f tuner; diode noise limiter; CW/SSB agc; HW-22A transceiver 40m mod; HAL ID-1 mod.

MAR 73. A Fast-Scan Facsimile System—use it with SSTV; Six and Two Meter High Power—using a $25 surplus amplifier; A Digital Tape Distributor for RTTY; The Ample Amplifier—all band, 1200 Watts; Popular SSTV Circuits (Part II); Improving the Indoor Antenna System—using copper foil; FM Deviation Meters, Time Frequency Measuring System (Part III); Another Use for 400-Cycle Transformers; Bandpass Filter Design.

APR 73. FM deviation meter; 2m FET preamp; two 2m power amps; repeater control (part 1); repeater licensing; European 2m FM; FM scanner adapter; RCA CMU15 mods; lightning detector; CB alignment gadget; transistor rf power amps (part 2); repeater economics.

JUNE 73. 220-MHz signal generator; UHF power meter; repeater licensing info; RTTY autoswitch; 40m hybrid vfo TX; antenna polar mount; 10-15-20m quad; K2OAW counter mods; double coax antenna; ham summer job; tone decoder; field strength meter; nicad battery pack; ohmmeter; FCC regs (part 1).

JULY 73. Tuneable Oscillators for 2m FM Receivers; Basic ATV System—a T-44 transmitter strip does most of the work; Multiple Output Frequency Standard—lets you calibrate your receiver in .0625-Hz increments; Digital Identification Unit; 450-MHz Power Divider—easily-constructed matching system for stacked arrays; CW Filters, Bared and Compared—complete with scope traces and bandwidth specs; 85 dB Gain 2m Antenna; Compromise Multiband Antennas; Grid-Dip Tuning the Quad Antenna.

AUG 73. Log-periodics (part 1); tone burst generator; rf power amp design; transistor radio intercom; 160m antenna; SSTV monitor; low-cost frequency counter; VOM design; QRP 40m TX; 432-MHz exciter; FM audio processing; FCC regs (part 3).

SEPT 73. Repeater control system; log periodics (part 2); 2m RX calibrator; PLL IC applications; TT pad hookup; Heath HW-7 "S" meter; OSCAR-6 Doppler; 2m coaxial antenna; 2m converter; IC keyer; measure antenna Z; FCC regs (part 4)

NOV 73. 450-MHz exciter; intro to ATV circuits; nicad voltage monitor; autopatch connections; IC meter amplifier; TR-22 ac supply; indoor vertical; IC AF filter; momentary power failure protection; 160m antenna coupler; Motorola HT info; SSTV-ISB, Class B AF amp; FCC regs (part 6).

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FEB 74. SSTV monitor info! IC audio amps; scope sweep generator; 15/20m vertical; telephone line control system; PC board construction; var-Q AF filter; blown-fuse indicator; 40m CW station with Ten-Tec modules; simple preamp compressor; single-IC RX; "432-34" final assembly; transistor keying circuit; 7-segment readout with nixie driver.

APR 74. VOX for repeaters; tone-operated relay; HF transverter; 10 to 2m TX converter; remote control panel for scanner; RCA FM TX tuning; subaudible tone generator; FCC regs (part 9); repeater atlas.

MAY 74. CD car ignition; audio compressor info; interference suppression for boats; auto burglar alarms; 2m IC preamp; 10m FET converter.

JUNE 74. Poor Man's Quad; Reconciling the Long Squared Quad—developing a new type antenna; Antenna Load Indicator; Matching; Remotely tunable Antenna Coupler; A Practical Ground System for 160; Wide-Range Antenna Tuner; Old Antennas and New Baluns—build a double zepp; A Multiband Ground Plane—10-40 meters; Mod Quad for Frustrated Cliff Dwellers.

JULY 74. 4-1000A linear; universal frequency generator; universal AFSK generator; 555 IC timer; 80m phased array; 135-kHz-432-MHz preamps; 10m QRP AM TX; 3000 V dc supply; how to read diagrams.

AUG 74. Toroidal directional wattmeters; 450-HMz FET preamp; use gdo to find "C"; Trimline TT pad hookup; R390 & R392 RX mods; tracking CW filter; aural voltmeter; universal regulated supply, SSTV scan converter; TTL logic problems; ID timer.

SEPT 74. MOSKEY electronic keyer (part 1); WX warning system; Heath IO-103 scope mods; QRP 6m AM TX; rf speech clipper; audio noise limiter; WX satellite on SSTV monitor; universal IC tester; miniature rig construction; tower construction; infinite rf attenuator; electronic photo flash ideas; IC "select-o-ject."

OCT 74. Microtransistor circuits; synthesized HT-220 (part 1); repeater government; regulated 5 V dc supply; FM Selcal; removable mobile antennas; Motorola metering; 2m vertical collinear; Motorola model code; 2m coaxial dipole; 1.6-MHz i-f strip; MOSKEY electronic keyer (part 2); carbon mike circuit; hi-power lo-pass filter; 6m preamp; 3-wire dipole; ATV sync generator; NCX-5 mods; mobile whip for apartment dwellers; SSTV automatic vertical trigger.

NOV 74. K2OAW counter update; regulated 5 V dc supply; wind direction indicator; synthesized HT-220 (part 2); 20m 3-el beam; autopatch pad hookups; double-stub antenna match; Novice class instruction; digital swr meter (part 1); 6m converter (1.6-MHz i-f); "C-bridge"; MOSKEY electronic keyer (part 3); Aug. SSTV scan converter errata; repeater off-frequency indicator.

DEC 74. Care of nicads; wind speed/direction indicator; WX satellite video converter; electronic keyer; hints for Novices; unknown meter scales; SSTV tape ideas; TTL logic probe; public service band converter; tuned-diode test receivers; digital swr meter (part 2); telephone pole beam support; rhombic antennas; 1974 Index.

75

FEB 75. Heath HO-10 scope mod for SSTV; electronic keyer; digital satellite orbital timer; OSCAR-7 operation; satellite orbital prediction; Heath SB-102 mods; comparing FM & AM; repeater engineering; Robot 80-A SSTV camera mod; neutralizing Heath SB-110A; "Bounceless" IC switch; tape keyer for CW TX.

MAY 75. IC Callsign Generator; Playing with Power on 432; Does Ether Cause Gravity?; OSCARing Your FM Rig; In Pursuit of the Perfect SSTV Picture; Ac Power for the HW-202; You Can Work 75m DX; The Postage Stamp Squelcher; disaster in Honduras.

JUNE 75. Home Brew this SSTV Monitor; El Cheapo Superbeam; The Smart Alarm; RF Power at 432; Dirt Cheap Tunable I-F for Converters; All Band Frequency Marker; Front Burner for Six; Three on Fifteen; Presto! Transistor Checker from VOM; How to Put on a Professional Slide Show.

JULY 75. OSCAR Special! Antennas for OSCAR—What Really Works?; How You Can Take OSCAR's Temperature; FM Alignment Oscillator; The Audio Synthesizer for RTTY, SSTV and Whatever; Ham Radio in the Arctic—1925; Gee, What's a Zepp?; Vertical Antennas for the Novice; Preventing Regulator Carnage; The Ultimate in Variable Selectivity; Phone Patching—A Public Service.

AUG 75. 146/432-MHz helical antennas (part 2); 20 minute ID timer; digital swr computer (part 1); debugging rf feedback; DVM buyer's guide; WX satellite monitor; CMOS "accu-keyer"; PC board methods; sweep-tube final precautions; compact multiband dipoles; small digital clock; accessory vfo for HF transceiver; modern non-Morse codes; multi-function generator; 2m scanning synthesizer errata; KP-202 walky charger; 10m multi-element beam.

SEPT 75. Calculating frequency counter; WX satellite FAX system (part 1); IC millivoltmeter; three-button TT decoder; troubleshooting SSTV pix, 40m DX antennas; 146/432-MHz helical antennas (conclusion); digital swr computer (conclusion); reed relay for CW bk-in; NE555 preset timer; power-failure alarm; portable QRP rig power unit; precision 10 V dc reference standard; 135-kHz i-f strip; telephone handsets with FM transceivers; Motorola T-44 TX mod for ATV; 0-60-MHz synthesizer (part 1), ham radio PR.

OCT 75. A deluxe TTY keyboard (part 1); op amps: a basic primer; an introduction to microprocessors; 2m synthesizer (conclusion); satellite FAX system (conclusion), regulated supplies (dispelling the mystery); digital logic made simple; FCC interview; a contest uP system; digital clock timebases; the operating desk; QRP 432, ham PR.

NOV-DEC 75. Blockbuster double issue! Flip-flops exposed; breakthrough in fast scan ATV; strobing displays is cool; the tuned lunch box (antenna tuner for HF transceivers); a deluxe TTY keyboard (part 2); the 127' rotating mast; less than $100 multi-purpose scope for your shack (part 1); predicting third-order intermod; feedline primer; QRMing the Third Reich; why tubes haven't died; instant circuits—build your own IC test rig; the K2OAW synthesizer PROM-oted; a ham's intro to microprocessing; ground fault interrupter (a keep-alive circuit for yourself); a $1 strip chart recorder; an even simpler clock oscillator; the Fun City surplus scene; updating the Heath IB-1101 counter; 256 pages!

76

FEB 76. Build a Starfleet Communicator—Trekkies special; Synthesized IC Frequency Standard! You Can Make Photo PC Boards; How's Your Speech Quality?; ASCII-to-Baudot converter; RTTY Autocall—the Digital Way; Improving the FT-101; Night DXing on 10 and 15m; Really Soup Up Your 2m Receiver; Put Your SB-10 on 160m.

MAY 76. Special Antenna Issue! The Magnificent Sevens Microhelix; An Allband Inverted Vee; Closed Loop Antenna Tuning; The 75-80m Broadbander; The Magic of a Matchmaker; How to Coax Your Antenna; 40m DXing—City Style; The Secret 2m Mobile Antenna; An Inverted Vee for 160/80m; The Dipole Dangler; Amateur Weather Satellite Reception; Scan Your HR-212; A Very Cheap I/O—the Model 15; Code Converter Using PROMs; A Nifty Cassette-Computer Systems; The Ins and Outs of TTL; Build a CW Memory; 5/8-Wave Power for Your HT; 555 Timer Sweep Circuit for SSTV; AM Is Not Dead—It Never Existed at All; Computer Languages—Simplified.

JUNE 76. VHF Special! Super COR—Digital, of course!; Touchtone Decoder—using a calculator readout; Simple Amateur TV Transmitter; Amateur TV Receiving System; Mobile Autodialer; Autocall '76—using a touchtone decoder; Build This Lab Type Bridge—and measure transformer impedances; How Those Triangle Things Work—a sort of op amp handbook; Those Exciting Memory Chips—RAMs, ROMs, PROMs, etc; ASCII/Baudot with a PROM—for ribbonless RTTY on computers; Aim Your Beam Right—with a programmable calculator.

JULY 76. Perfect CW—drive 'em crazy with the keycoder I; The Mini-Mite Allband QRP Rig—a mighty 7 Watts; A Fun Counter Project—under $50; Build a FAX from Scratch—then get satellite pictures and other things; Der Repeatermeister—repeater control with ID; The Giant Nixie clock; Creative SSTV Programming; CW Regenerator/Process; What's Up on 156 MHz?; TT Pad for the Wilson HT; Power Supply Testing—to save your digital circuits; A RTTY/Computer Display Unit; Your Computer Can Talk Morse; Gain for Your HT—a half-wave whip; The Super Transmatch; Simple VHF Monitor.

SEPT 76. The Surprising DDRR Low [illegible] Antenna (part II); Ultrasimple Regulation with New IC—power supply design greatly simplified; Can an Indoor Antenna Work?—making the best out of a bad bargain; Inexpensive 12 Volts for Your Base Station; A Test Lab Bonanza—using a transistor radio; Protect Your VHF Converter—novel antenna relay; ridiculously Simple RTTY System; How to Catch a CBer; A 450-MHz Transceiver for Under $130; Space Age Junque II; PROM Memory Revisited; Eight Trace Scope Adapter;

The PROM Zapper; Sneaky Baudot—with an ASCII keyboard!; Simple Graphics Terminal—using surplus; Counters Are Not Magic—they're simple.

OCT 76. Build a Weird 2 Band Mobile Antenna; Build a Counter for Your Receiver; How Do You Use ICs? (part II); QRP Fun on 40 and 80—have a real ball with just 5 Watts; The Hybrid Quad—low windload, expense, hassle!; Frequency Detector for Your Counter; Programmable CW ID Unit—for RTTY, repeaters, mobile, etc.; New ICs for the Counter Culture—simpler counters with less used power; Is My Rig Working or Not?—build an effective radiated field meter and know!' Quickie Collinears for 15 and 10—satisfaction guaranteed; Build a Super Standard—goes right down to 1 Hz; The Incredible Lambda Diode; Mechanical RTTY Buffer; Have You Used a Triac Yet?; How To Interface a Clock Chip—Baudot, BCD, or ASCII conversion; A TTL Tester—great for unmarked bargain ICs; The New Ham Programmer—making those confounded uPs work; BASIC? What's That—the basics of BASIC; The Soft Art of Programming (part I).

NOV 76. Blockbuster 288-pg. issue! Cordless Iron Tips; Bicycle Mobile; Build a Simple Lab Scope—costs less than $70!; Get on Six with Surplus—the el cheapo RT-70 is a natural; The Beam Saver—rotor memory system; Updated Universal Frequency Generator; The Shirt-Pocket Touchtone; Liquid Crystal Display Guide; Self-Powered Mike Preamp; The Wind Counter; The S38 is Not Dead!' The Amazing Inverted L—antenna for 20, 40, and 80m; Battery Chargers Exposed; How Do You Use ICs (part III); Thirty Years of Ham RTTY; Big Noise Burglar Alarm; Dandy Digital Dial Decoder; Weather Satellite Display Control; Ham Time-Sharing is Here for You!; The Soft Art of Programming (part III); OSCAR Smoke Tester—power supply tester; The Man Who Invented AC—Tesla, the greatest pioneer of them all; Baudot to ASCII—you want to learn programming?; Baudot and BASIC—an interpreter for a Baudot computer; Toward a More Perfect Touchtone Decoder; Using a Wireless Broadcaster; The Quiet Spy—amateur uncovers spy ring in the US!; The Benefits of Sidetone Monitoring—and how to do it.

DEC 76. Go Tone for Ten—simple subaudible encoder; World's Simplest Five Band Receiver?; How Do You Use ICs? (part IV); A Super Cheapo CW IDer; The ZF Special Antenna; CT7001 Clockbuster; Saving a CBer; A Ham's Computer; What's All This LSI Bunk?—an ostrich's eye view of the microprocessor; The Soft Art of Programming (part III); Put Snap into Your SSTV Pictures—using a $20 frequency standard; What's All This Wire-Wrap Stuff?—talk about cold solder joints! Exploding the Power Myth; Exploding the SWR Myth; The IC-22 Walkie—portablization with nicads; Watch DX with a Spectrum Analyzer; DXing with a Weather Map.

HOLIDAY 76. 55-article issue! An Inexpensive 400-Watt HF Amplifier; How Do You Use ICs? (part V); Mobile Smokey Detector—10.5 GHz; use it or lose it!; Add RIT to Your Transceiver; DXpedition: Memories for a Lifetime—reflections of HK1TL; Design Your Own QRP Dummy Load; Fail-safe Super Charger—multi-rate, too!; The Amazing 18" Antenna for 160m; Replacing the Knife Switch—simple TR system for the Novice; Now You Can Synthesize—the VHF Engineering approach to 2m happiness; Hutchinson's Remedy—the chirpless CW machine; The Mod Squad Does the Pocket Scanner—Radio Shack Pro-4 update; TR-22 Mod Squad; What Computers Can and Can't Do; A Ham Shack File Handler—program in BASIC for QSLs, repeaters, etc.; Print Your Own Logbook—on your nearest computer; Shoeing Your HT; Cash In on the CB—installation for fun and profit; Tuning Those Big Antenna Coils; The 2m Mod Squad Tackles the Weather Radio—and wins!; Hamming by laser; A 60-Foot Antenna on a 20-Foot Lot—solving a 40m Novice problem; Dual-Voltage Power Supply; An Autopatch Busy Signal; Inside the GLB—a gutsy look at a synthesizer! How to Bug an Automatic Keyer; A 450 Duplexer—that fits in your car; Will Silver-Zinc Replace the Nicad?

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JAN 77. SSTV Test Generator—invaluable diagnostic tool; How Does Your Rig Perform?—an example using the HW-7; What's The Best Antenna for 160?—the inverted vee compromise; 200 lb. Cookie—microwave repeater control. A Super Log—a program for the ham shack computer; Practical Solar Cell Power—great for remote repeaters; A Simple RC supstitution Box—using a matrix; Double Sideband: Something New?—one for voice, one for SSTV; A Vest Pocket QRP Rig—if you have a big one; Antenna Magic—good advice on antenna fundamentals. Plus 40 more.

FEB 77. Give That Professional Look To Your Home-Brew Equipment—win prizes; Give the Hamburglar Heart Failure—car alarm system; Contest Special Keyer—has short but adequate memory; You Can sound better With Speech Pre-emphasis—a simple circuit which will work wonders; Getting a Patent—Is It Really Worth It?—how to do it, if you really want to; SSB: The Third Method—bet you cant' even name the first two; The TTL One Shot—another digital building block; Computerized Satellite Tracking—the needed software; Drive More Safely With A Mobile Dialer—hold 4 or 8 phone numbers in a PROM; Tune Up A Random Wire—world's simplest antenna for 80-15. Plus 10 more.

MAR 77. Pitcairn Island—an inside look at VR6TC; How Do You Use ICs?—part VI; PROM Message Generator For RTTY—keyboards are obsolete; Inexpensive Variable DC Supply—easy and quick; The History of Ham Radio—part I; Versatility Plus For the HW-202—external channel mod; Making Your Own PC Boards—part I; Announcing the PCF—legal aid for ham problems; Build Your Own Car Regulator—solid state; The Happy Flyers—fun and public service. Plus 15 more.

APR 77. RTTY? What's That?—how to get started with teletype; Making Your Own PC Boards—part II; 80 CW for the 6800—it works; The Super Clock—what'll they think of next?; The Final Feeder—driving a high power amplifier; What About Surplus Nicads?—how to test and repair them; The History of Ham Radio—part II; Retire to a Ham Heaven—how to go on a permanent DXpedition; The Carbon Marvel—best mobile mike yet?; The Minicom Receiver—finally, a QRP allbander. Plus 25 more.

MAY 77. Build The World's Simplest Keyer—uses 555 timers; Predict the Weather!—a complete satellite receiver; The History of Ham Radio—part III; Let BASIC Control Your Next Contest!—with Extended Tiny BASIC language; Understand Your Pet Rock—tips on crystal oscillators; TTL Techniques—bypass those glitches; Stop Timeouts!—build this 10-minute ID timer; Quick Vertical—for 20 and 40; Try Power Saver Logic—a guide to CMOS applications; All-Electronic Selcal—uses a UART for versatility. Plus 24 more.

JUNE 77. Build This CW Filter—darned good; The W1BB Story—a visit with the king of 160; Ten Watts on 2—it's possible with this rock crusher!; At Last! A 10m Band Plan—requires a CB radio; Sheet Metal Brake—build microwave components; Practical P.S. Design—do it right this time; Regulated Nicad Charger—don't cook 'em! Current-Saver Counter Display—mulitplex those LEDs!; New PC Techniques Unveiled!—dig out your old chemicals; How Do You Use ICs—part VII. Plus 22 more.

JULY 77. A Battery Voltage Monitor—how simple can an IC project get?; Hunting Noise—with a grid dipper; Hams Profit From CB—how to set up a service center; Patch Up Your 101—simple mod for the HW-101; Dipole Designer Program—calculates coils and length; CB to 10—parts III, IV, and V; World's Smallest Continuity Tester—it's almost minute; Digital Synthesizer—revitalize old xmtr strips; Phone Patch Tips—a lost art?; Digital Clock Fail-Safe—so you won't miss the train. Plus 18 more.

AUG 77. Antenna Special! Centerfed Specials—for the small city lot; Build a Double Bazooka—give your signal a blast; Dirt Cheap Directional Array—for the serious DX hound; Instant PS Regulation—a quickie; The Zeppy Vertical—a perfect 2m antenna; The 8JK Array Revisited—inexpensive and effective; Build a Brute Power Supply—completely regulated and protected; Computer Logger—for those who keep logbooks; build a kW Linear—a 4-1000 provides the punch; PC Layout Tips—next time, do it right! Plus 44 more.

SEPT 77. RTTY Special! A FAAR-OUT DXpedition—airborne VHF and OSCAR!; So You Want to Get Into RTTY?—"Call For Papers" winner; Design an Active RTTY Filter—eliminate CW QRM and noise; Build a RTTY Message Generator—it's programmable!; FSK for the Drake—easy; Baudot To ASCII Converter—use it for OSCAR RTTY; RTTY With the KIM—features built-in display!; FSK for the FT-101—a simple mod for RTTY; Noise Rejector—great for CW or phone receivers; A Practical 2m Synthesizer—who said it can't be built? Plus 17 more.

OCT 77. W.A.S—Easily!—catching the last few; Try Your KIM-1 on RTTY—CUL on your computer; Try a Trapped Dipole—save copper and coax!; Novice Antenna Specials—tips for that first antenna; Traffic Handling Explained—a lost art?; One-Cent Channels For the IC-22S—inflation fighter!; Sensitive Meters Saved; Add Jazz to Your Tempo—with a few simple mods; Interested In Television?—how to get started; Digital To Audio Decoder—for the blind operator. Plus 26 more.

DEC 77. The History of Ham Radio—part V; How Do You Use ICs?—part VIII; A Kilowatt Alternative—try a gain antenna; The DA4FB Story—American repeater in Germany; Computerized Global Calculations—finding the best way to Pago Pago; Run, Sheila, Run!—real-life radio control; CB to 10—parts VI and VII; amplitude vs. Frequency—poor man's spectrum analyzer; Regenerated CW—CW as you like it. Plus 41 more.

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JAN 78. Build a Better Phone Patch—hybrid-op amps—the works; Build a 3½ Digit DVM—replaces old meters!; QRP Hints—for low-power freaks; Custom-Made Thermistors—for precise values; UHF Propagation—believe it; Put an ELF in Your Keyer—sneaky computer strikes again; CB to 10—part VIII; The Extreme Basics of Antennas—for pre-Novices; Versatile Transistor Tester—save expensive devices; How to dissipate 200,000 Megawatts—fool Mother Nature. Plus 36 more.

MAR 78. Old Rigs Can Live Again!—a guide to their resurrection; Novices, Paddle Your Way to Happiness—super deluxe Novice keyer; 1220 MHz—Use It or Lose It!—simple gear you can build and enjoy; New Protection For Your Car—simple force field system; The World of Tone Control—a virtual encyclopedia on the subject; Another Approach to the ASCII/Baudot Headache—a Model 15 and an SWTP system; Surprisingly Low-Cost Lab Supply—an IC regulator does it!; The Solar-Powered Ham Station—one hundred Watts, yet!; Are You Afraid To Build?—how to get organized and started; How to Use a Varactor—And Why—semi-exhaustive article. Plus 33 more.

APR 78. How to Succeed on 1296—catfood can 50-Watt amplifier; How Do You Use ICs?—part IX; The Challenge of 10.5 GHz—use it or lose it to Smokey; Now Anyone Can Afford a Keyboard—surplus keyboard, KIM, and software; Is TTL Already Obsolete?—CMOS vs. TTL; Improve Your HW-2021—more flexibility, etc.; Simple CW Interference "Filter"—diode code regeneration; How Sunspots Work—basics for the Novice; Use Noise to Tune Your Station—build this simple noise generator; Danger! Microwave Radiation!—just how much is dangerous? Plus 19 more.

MAY 78. Official FCC RFI Report—curing radio and TVI; Fake 'Em Out With Remote Control—TT-operated control unit; Now—A Digital Capacity Meter!—simple construction project; DMM Survival Course—"all" about using digital multimeters; Build This Excitingly Simple Receiver; Diary of a Survivor—cyberosis victim tells all; The Super Select-o-Ject—kill rotten QRM with this filter system; The Miser's Delight Repeater Controller—the very ID!; Make Antenna Tuning A Joy—instant swr bridge; The COR Goes Solid State—turning two Midland rigs into a repeater. Plus 18 more.

JUNE 78. Antenna Special! Wait Till You Try 16 Elements!—15 dB gain on 2m is a real kick; Working 15m with a 20m Beam—by adding three more elements; Resurrecting the Beverage Antenna—try this 55-year old, low-noise, low-band antenna; Better Than a Quad?—try a delta loop; Towering Low-Band Antennas—berserk mathematician figures impedance; Modernize the Matchbox—increased capability for a classic coupler; The 75m DX Chaser Antenna—the 5/8λ works on 75m as well as 2m; Computerized Loop Antenna Design—in BASIC; Novice Guide To Phased Antennas—part I; The 21-Element Brown Bomber—2m beam with sadistically strong signal. Plus 29 more.

JULY 78. Reincarnating Old Test Equipment—a 1942 capacitance meter is born again; Novice Guide to Phased Antennas—part II; Build Your Own Digital Dial—great update for your receiver; Your 'Scope Can Be Improved—simple calibrator; The $5 Memory Keyer—for lazy cheapskates; RAMmed By Morrow—ECONRAM III lauded; VHF Notch Filter—rejection can be beautiful; Yes, You Can Build A Synthesizer!—220-MHz synthesizer for under $50; A Darn Good IDer—repeaters get smarter every day; VHF Transverters and the FT-101—quickie FM conversion. Plus 34 more.

AUG 78. Radio Row Revisited—it's alive and well in Tokyo; A Complete X-Band Transmitter—easy to build; Power Line DX—(almost) wireless remote control; The End of RF Feedback—here's how the pros do it; CB to 10—part IX; A WWV Primer—become a calibration freak; Super Charger—keeps nicads up to snuff. HW-101 Owners, Check This!—RIT mod for the good old HW-101; Ham Radio is NOT a Rich Man's Hobby—another myth exploded; New Life for Double Sideband?—awake, ye pioneers, and get cracking. Plus 34 more.

SEPT 78. Another IC-22S Scheme—for oddball repeaters; Tracking the Wild Turkey—DF tips; DVM Scrapbook—the basics; How Do You Use ICs?—part X; Computerized QSO Records—who needs a logbook?; CB to 10—parts X & XI; Build the Triple Threat Keyer—great Novice project; The Ten Meter AM Antenna Special—$5 vertical also works on SSB or FM; Build the IC Experimenter—getting started with TTL and CMOS; Two Meters at the Summit—a backpackers delight. Plus 37 more.

OCT 78. DXpeditioning—a "how to" guide; The History of Ham Radio—part VI; Building From Magazine Articles—the breadboard/wire-wrap way; High Seas Adventure—Ham Style—part I; Use a Computer? Who, Me?—yes, you!; Bird Watching in BASIC Land—another use for your micro; World's Cheapest QSLs—BASIC program keeps your log, too; Happiness is a Smart Scanner—mods for the PBM/AWE FMSC-1; A Perfect Power Supply?—well . . . almost; Antenna Design: Something New!—controlled-current distribution. Plus 37 more.

NOV 78. Murphy's Masterpiece—the lost weekend; How About Some Ham Shack Safety?—don't be a statistic; The History of Ham Radio—part VII, CB to 10—part XIV; a Realistic PLL rig; High Seas Adventure—Ham Style—part II; Squelchifying Cheap Receivers—junk-box project; Build the Brute—unique heavy-duty power supply; The Circuit Board Aquarium—no fish story; Who Needs Transistors?—you do!; Ham Help!—a telephone aid for the blind. Plus 47 more.

DEC 78. A DXer's Dream Vacation—try sunny Montserrat; Close Encounters—the eyes of Texans are upon them; Receiver Diseases—and how to cure them; Confessions of a Stripper—confirmed junkor tells all; Whither Microcomputers?—a pro looks ahead; "This Is Your Computer Speaking"—how to dial up your micro; Big Max Attacks—it's W2DU vs. K4KI, in the battle of the bazooka; WARC '79 Preview—showdown in Geneva; Build the Flexi-Filter—a very active device; Code-Practice Oscillators—an exhaustive report. Plus 29 more.

Also Available: December, 1960; June, July, August, September, October, December, 1961; January, February, November, 1962; January, April, May, July, September, November, 1963; January, March, April, July, September, October, November, December, 1964; May, June, July, August, December, 1965; August, September, December, 1966; January, February, March, April, June, August, September, December, 1967; January, March, April, May, August, October, December, 1968; October, 1970.

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Ham Help

I need a manual for a Heathkit model IM-32 VTVM. I will gladly reimburse reasonable duplicating and mailing expenses, or I will duplicate on receipt and send back by return mail. Thanks.

Lawrence Young W1YVW
54 Samuel Ave.
Pawtucket RI 02860

I have a Pride HFL-125 Bilinear Amplifier and I need a schematic and information on the finals. Specifically, what replacement numbers could I use? I will pay for the postage and copy. Thank you.

Fritz Zingel KA2FCG
341 72nd St., Apt. B
North Bergen NJ 07047

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HAM HELP

Help!!! I am having difficulty in locating a schematic or operating manual for the following piece of equipment. It looks like a modem but I want to be sure. It has a transmit and receive section. The model number on the receive section is 1CRCU-RS-1. The model number on the transmit section is 1CTCU-RS-1. It carries the Burroughs Trademark on the case but it was manufactured by Stelma, Inc. Burroughs and Stelma, Inc., have not been able to help. Any information would be greatly appreciated.

Terry Hazelett
2107 Capitol Dr.
Parkersburg WV 26101

I need a schematic and/or instruction manual for a Collins 310B-1 exciter. I will buy a copy or reproduce one and return it. I also need an ac power supply for a KWM-2A.

Herman F. Shnur K4CTG
115 Intercept Ave.
North Charleston SC 29405

I would like to correspond with people who have working models of computer-controlled or radio-controlled humanoid robots. Thank you.

Matt Beha N8BPI
3752 Lane Court
St. Joseph MI 49085

Our school amateur radio club is in need of the schematic and/or instructions for a Hammarlund four-20 transmitter. Payment for copies will be mailed or we will copy and send back if preferred.

Barringer High School
c/o F. Rice N2BVZ
90 Parker Street
Newark NJ 07105

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Compiled by:
Jeff DeTray WB8BTH
Tim Daniel N8RK

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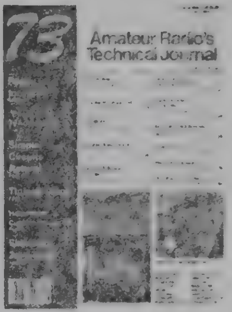

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The Amazing Cylindrabola	microwave antenna	WA4WDL	SEP 54

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HAM HELP

I have unfortunately lost the January, February, March, and April, 1961, issues of *73* as well as the November, 1962, issue. I will pay any reasonable price for those issues in good to fair condition.

William Ward DA2XA/W4PCK
USMCA Wuerzburg
CPO
APO NY 09801

I am looking for a manual for the Hammarlund HQ-100 receiver. I have manuals for the following available for trade: BC-348, ARR-16, Heath DX-40, Heath O-9 oscilloscope, TV-7U tube checker, ARN-6, and ARC-3-T67A.

Loren Willis
Box 282
Farmland IN 47340

I would like to find some CB radios that were made from 1968 to 1972. I do not care whether they work or not, as long as the transformers are not burned up and they have crystals in them.

Tony E. Byrum
1449 N. Midwest Blvd. #402
Midwest City OK 73110

I would like to hear from US and foreign teachers, students, and radio clubs that want to participate in an educational resource net for public schools. I can also provide advice to those who are beginning or reactivating a school station.

Michael Henderson N6JFD
Box 331
Somis CA 93066

I am trying to get information on using TTL logic devices to control 117-V-ac outputs. I am using the information to help disabled persons, and any assistance would be appreciated.

S. Raigner N7BNP
626 NE Floral PL.
Portland OR 97232

I need help in converting the "Open House" program, which appeared on page 72 of the January, 1979, issue of *Kilobaud Microcomputing*. The program was written in Wang Basic, and I would like to use it on a TRS-80 Model I, level II.

Lisle T. Hines K2QLA
4 Ellwood Ave.
Cortland NY 13045

I am looking for a schematic and power transformer data for a Knight wideband oscilloscope. I will pay shipping and duplicating costs.

Torgny Karlsson SM7CFQ
Sandormevagen 7
S-260 41 Nyhamnslage
Sweden

I am searching for schematic diagrams, operating manuals, and service manuals for the Raynav 3000 LORAN-C navigation system. Please write before sending material.

Bruce Rahn WB9ANQ
410 Coronado Trail
Enon OH 45323

Wanted: Info on the Electronica-360 10-meter mobile AM/SSB transceiver. I would like to modify the clarifier to operate on transmit as well as receive. I would also like to know if there is an American version of this European-market rig.

SSG Gary E. Kohtala DA2XF
USAFS-A, Box 1415
APO NY 09458

Can anyone provide information on the Airadio model TRA-10; Hewlett-Packard SHF generator model 670JM; AN/SRD-11 direction set; BC-1141-C and BC-1140-H mine detector set; PP-63 power supply; and 1-IJ-8 radio compass adapter, manufactured by Electronic Supply Co.?

John C. White WB6BLV
580 North Indiana
Porterville CA 93257

I am desperately in need of the schematics and operating manuals for a Hallicrafters S-107 receiver and a Globe Scout model 680 transmitter. I will gladly pay for the cost of copying and mailing the documents.

Richard Metro KA2QWH
201-D Springmeadow Drive
Holbrook NY 11741

I want to substitute a 4CX250 tube for the two 572B tubes in the Heath SB-200 linear. I think I have seen an article on it in one of the ham magazines. Can anybody help me locate that article?

Pete Govorko K6MMT
336 Demming Rd.
Sequim WA 98382

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Stare-Way to Heaven	visit the Arecibo observatory	A ION	
The Big-Car Break-Down Beam	two-meter fold-down beam	N3BEK	May 46
Throw in TV	build a UHF helix	WA4WDL	May 64
Wheeling and Dealing with Preamps	remote preamp switching	W8PMS	Apr 84

HAM HELP

We are happy to provide Ham Help listings free, on a space-available basis. We are not happy when we have to take time from other duties to decipher cryptic notes scrawled illegibly on dog-eared postcards and odd-sized scraps of paper. Please type or print your request (neatly!), double spaced, on an 8½" x 11" sheet of paper and use upper- and lowercase letters where appropriate. Also, please make a "1" look like a "1," not an "l," which could be an "el" or an "eye," and so on. Hard as it may be to believe, we are not familiar with every piece of equipment manufactured on Earth for the last 50 years! Thanks for your cooperation.

I am a handicapped ham and would greatly appreciate any working equipment anyone would be willing to donate to set up a station. I have multiple sclerosis and have been taken off work so I have no money for ham equipment. Anything you send will be so greatly appreciated.

J. T. Statham KA5UKP
1506 Sheila Dr.
McComb MS 39648
(601)-684-9558

I need a replacement power transformer for an NCX-A power supply or the name of a transformer rewinder.

Joseph Karr KA5RKD
RR1, Box 579
Lakeview AR 72642

I would like to get in touch with someone who would be interested in setting up a repeater in Wisconsin Dells or the immediate vicinity. The repeater would not only be nice for hams who go there yearly, but also for hams traveling through the area.

Klaus Spies WB9YBM
8502 N. Oketo Ave.
Niles IL 60648

I have a Commodore PET 2001 and would like to hear from persons who have information regarding C-64/VIC-20 compatibility or who have a user's manual.

Dale Warner
815 Hwy. 190
Mandeville LA 70448
(504)-626-5801

I need information on how to improve the performance of the Drake R4-B, T4-X, and AC-4.

Walter Pereira da Costa, Jr. PY4ZO
Rua Daniel Xavier 414
PO Box 207
Araquari-MG Brazil 38440

I am looking for a schematic for a Sears Roadtalker-40 SSB/AM CB radio, model 663.38100050, for conversion to the ten-meter band. I will gladly refund copying charges and postage.

Bill Springer KC9YJ
4014 N. Grant St.
Westmont IL 60559

I have a 23-channel Midland 13-882C Citizens Band radio. I would like to convert it to a 15-meter CW rig, but I have no idea how to do this. Can anyone help?

Lawrence R. Barley, Jr. KA4ROY
1427 Byron Ave.
Ypsilanti MI 48197

I would like a schematic and service information for a Hewlett-Packard model HP-130B oscilloscope. I will gladly pay copying charges and postage.

Bill Springer KC9YJ
4014 N. Grant St.
Westmont IL 60559

I am seeking technical assistance in modifying the TX/RX switching speed of a Yaesu FT-101ZD for use on AMTOR.

Daniel Murray WA7YIC
1541 Oxbow Circle RR #11
Billings MT 59101

NEW PRODUCTS

MFJ-407 DELUXE ELECTRONIC KEYER

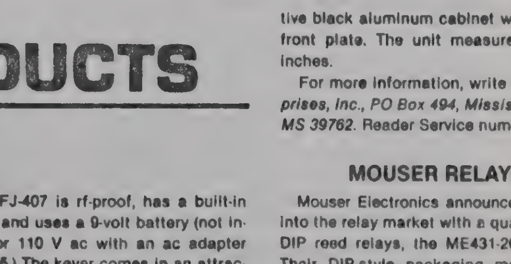
MFJ Enterprises, Inc., introduces the MFJ-407 Deluxe Electronic Keyer to its line of amateur-radio products. The MFJ-407 features iambic operation with squeeze-key, dot-dash insertion, and semiautomatic operation that provides automatic dots and manual dashes. The keyer also features a dot-dash memory, self-completing dots and dashes, jam-proof spacing, and instant-start keying.

Solid-state keying is provided for use with tube or solid-state transmitters. Front-panel controls include linear speed, weight, tone, and volume controls as well as on/off, tune, and semiautomatic switches.

Weight control allows you to adjust the dot-dash space ratio, thus making your signal distinctive to penetrate QRM. A tune switch keys the transmitter for tuning.

The MFJ-407 is rf-proof, has a built-in speaker, and uses a 9-volt battery (not included) or 110 V ac with an ac adapter (MFJ-1305.) The keyer comes in an attractive black aluminum cabinet with a black front plate. The unit measures 7 x 2 x 6 inches.

For more information, write *MFJ Enterprises, Inc., PO Box 494, Mississippi State MS 39762*. Reader Service number 480.



MFJ's electronic keyer.

MOUSER RELAYS

Mouser Electronics announces its entry into the relay market with a quality line of DIP reed relays, the ME431-2000 series. Their DIP-style packaging makes them completely compatible with in-line ICs, and the terminal patterns mate with standard 14-pin DIP sockets. They feature a stable transfer of low signal levels that minimizes interface buffering.

The relays are available in three standard contact forms—1A, 2A, and 1C. Their contacts are rated at 4 or 10 W, with switching currents of 0.3 or 0.5 A and a switching voltage of 30 or 100 V dc. They feature a minimum insulation resistance of 10^{10} Ohms and a maximum operation/release time of 1.0 ms.

For further details and for a free catalog, write or call *Mouser Electronics, 11433 Woodside Ave., Santee CA 92076, (619)-449-2222*. Reader Service number 476.

TAU SPC-3000 ATU

TAU Systems, Ltd., has announced a new addition to their line of antenna-matching units. The SPC-3000 ATU uses an infinitely-variable roller inductor and 5-kV air-dielectric capacitors arranged in an SPC configuration. A built-in 4:1 balun, rated at 1 kW, is also included.

The front panel sports a counter for the roller inductor, a five-position antenna switch, and two meters—one monitors forward power, the other swr. The unit will

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articles you may have missed during 1977

January 1977*

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☐ZAP!
☐Chasing Those Naughty Bits
☐Why So Many Computer Languages?
☐The Remarkable Apple Computer
☐Beware the Wumpus
☐Chase!
☐Will the Z-80 Crush All Competitors?
☐Practical Microcomputer Programming ... *Part 2 Operating Systems*
☐The Trouble with Mass Storage Systems
☐A Useful Loan Payment Program
☐Submarine! ... *a game for the SR-52*
☐The Hobbyist's Operating System ... *Part 2 Interfacing with the Monitor*
☐Found A Use for Your Computer! ... *a clock program for the KIM*
☐Sophisticating a Surplus Keyboard
☐At the Races
☐RCA Tries Again ... *with the 1802*
☐8080 vs 370
☐Cut 6800 Programming Time with this Extraordinary Program
☐7 x 9 = 56
☐Learning Computerese
☐How to WIN the Surplus Game
☐Making Money Is Nice
☐The 8080 You May Have Missed
☐The "Kill a Byte" Standard
☐A 6800 Single Stepper
☐Computerized Statements

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☐Practical Microcomputer Programming ... *Part 3. Software Tools*
☐The Motorola Way! ... *review of the MEK6800D1*
☐Let's Hear It for the 680b!
☐The Paper Tape Caper
☐Computers for Free!
☐A New Approach to the 6800 ... *the Astral 2000*
☐Journey into the CPU
☐Only Five Senses
☐Floppy Disks
☐The Jupiter II
☐How to Win $25,000 of Your Own Money ... *Keno game program*
☐Using the "$50" Terminal
☐External Mass Storage ... *Part 2: Digital and Audio Cassette Systems*
☐Make Your 680b Smarter ... *a cheap memory expander*
☐Stop Bugs Now!
☐Clocked Logic ... *Part 1: The D Type and JK Flip-flops*
☐The Gory Details of Cassette Storage
☐The Fun of Learning BASIC
☐Super-Tube ... *jazzing up the Digital Group TVT*

April 1977

☐Interrupts Exposed ... *using microprocessor interrupt capability effectively*
☐Clocked Logic ... *Part 2: Some Basic Applications*
☐Build an Eight Channel Multiplexer for Your Scope
☐Sorting Routines
☐Number Rounding Program
☐Meet the Tarbell/KC Interface
☐Super-Tester ... *a digital design aid*
☐The Hobbyist's Operating System ... *Part 3: Command Language Processing*
☐The Slow-Stepping Debugger
☐BASIC—The Easy Way
☐Now You Can Use Software Timing Loops
☐KIM-1 Memory Expansion
☐Heavy Duty Power Supply
☐Digital Audio
☐HI-LO
☐Interfacing the Analog World
☐Everything about Semiconductor Memory
☐Three-State Logic ... *explanation of a key microprocessor element*
☐Automatic Memory Dumper ... *utility dump program for 6800 users*
☐Hangmath! ... *a new puzzle/game*
☐Now—BASIC for the 8008—Even!
☐Microprogramming ... *an insight into microprocessor design*
☐Computerized Babysitter

May 1977

☐Clocked Logic ... *Part 3 Data Converters and Special Functions*
☐Cure Those End-of-Month Blues ... *with a sales analysis program*
☐Make Your Investment Count ... *the inside view of a custom MP-68*
☐Speed Up Your 6800
☐Who's Afraid of RS-232 ... *data communications explained!*
☐Is it High?—or Low? ... *understanding logic design conventions*
☐Know Thyself! ... *confessions of a kit-builder*
☐Protyping Systems Exposed! ... *a revealing look at the Intercept Jr*
☐Interrupts Exposed ... *Part 2 Implementing an Interrupt-driven System*
☐Digital Audio ... *Part 2: Generating that Weird Music*
☐Now It's Imsai BASIC!
☐Bridging the Gap ... *tips on turning an application into a program*
☐Adding "Plop" to Your System ... *a noisemaker for computer games*
☐Lunar Lander
☐Silence Noisy Teletype Motors ... *Part 1 Getting the Ball Rolling*
☐A Home Computer Pioneer ... *profile of Don Tarbell*

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☐Build Your Own Interface
☐Computer Club Promotional Techniques
☐Artillery Practice
☐Put a Micro in Your School
☐Torpedoes Away!
☐Build a Pulse Generator
☐A TVT For Your KIM
☐The BYTEDESTROYER ... *review of an EPROM eraser*
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☐Solving Keyboard Interface Problems
☐A Clean Cassette
☐Try a Design Console ... *for practical hardware prototyping*
☐Try Solar Energy
☐Simplified Billing System ... *in BASIC for the small business*
☐Kilobaud Klassroom ... *No. 2: Gates and Flip-flops Explained*
☐Computerized Typesetting ... *an introduction to word processing*
☐Introducing! The World's Cheapest Computer ... *a $60 SC/MP*
☐My Friend is a Computer Junkie

July 1977

☐Inside the Sphere Microcontroller
☐The Great TV to CRT Monitor Conversion
☐Computer Turns Director ... *an interview with filmmaker John Whitney*
☐The Random Number Game
☐Cassette Interface First Aid ... *use your processor to set timing*
☐Understand Your Computer's Language
☐Kilobaud Klassroom ... *No. 3: JK Flip-Flops and Clock Logic*
☐Digital Audio ... *Part 3: Signal Expansion and Compression*
☐It Was Great! ... *reviewing The First West Coast Computer Faire*
☐Pass the Buck ... *computer decision-maker program*
☐Inside the Amazing ASR 33 ... *checking out the most popular terminal*
☐Try Computer Composition

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☐Cassette I/O Format
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☐Trigger Your Oscilloscope
☐Sobriety Tester Program
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☐Is the KIM-1 For Every-1?
☐Electronic Design by Computer
☐Understand Your Computer's Language ... *Part 2 Instruction Sets*
☐Enter the Audible Computer!
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☐SWTP 4K BASIC Notes ... *implementing it on the 680b*
☐Hexdec ... *hexadecimal to decimal conversion*
☐Start a One Man Computer Club
☐Troubleshoot Your Software ... *a trace program for the 6502*
☐Cure that Hot Power Supply

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☐Build Your Own ASCII Keyboard ... *with serial and parallel output*
☐The Ultimate Personal Computer
☐Talk Your Computer's Language!
☐A PET For Every Home ... *a look at the Commodore PET 2001*
☐Kilobaud Klassroom ... *No 4 PC boards and power supplies*
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☐Try an 8080 Simulator
☐Build a $20 EPROM Programmer ... *for the 5402 4K chip*
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☐Decoding Device Control Codes ... *uses a UART naturally*
☐Tarbell Asynchronous Format
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☐Using an Invisible PROM ... *how to relocate monitor programs*
☐Klingon Capture Game
☐Starting a Business?

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☐BASIC Timing Comparisons
☐Learn and Earn ... *BASIC and business programming*
☐Bargain Time!
☐Hello! Today's Program Is ... *understanding computer speech recognition*
☐Beware the Altair Bus
☐Put Your Imsai on the Rack!
☐3D Computer Graphics
☐Memory Troubleshooting Techniques
☐Understand Your Interrupts! ... *real time clock applications*
☐Kilobaud Klassroom ... *No 5 hardware logical functions*
☐Digital Group MAXI-Basic
☐Utilize ASCII Control Codes!
☐Dedicated Controllers
☐Try WORDMATH!
☐Time for Timesharing?
☐Build a Universal I/O Board ... *for your Altair*

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☐Everything about Assemblers! ... *sure beats hand coding*
☐Your Image Counts!
☐Lifetime Program
☐Consider a MITE Printer ... *alternative to the ASR-33*
☐Tired of Substituting Chips?
☐Stretch Those Characters ... *mods for the SWTP PR 40*
☐Magnetic Bubble Memory
☐Reliable Conversion Techniques
☐Salesmanship, Hardware and Coffee
☐Hyper about Slow Load Times? ... *KIM Hypertape is an alternative*
☐Interested in Commercial Programming?
☐Kilobaud Klassroom ... *No 6 voltage, current and power supplies*
☐Expand Your KIM! ... *with Altair bus devices*
☐Enhance Your Memory ... *with home information retrieval*
☐Build the $35 Modem ... *uses the MC14412 and a UART*
☐Another Look at Benchmark Program
☐Son of Submarine Game
☐Payroll Program ... *for small businessmen*
☐SC/MP Goes Baudot ... *add an inexpensive TTY*

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☐Expand Your KIM! ... *Part 2 getting to the nuts and bolts*
☐Payroll Program (Continued) ... *cassette techniques*
☐The Business Market
☐ALL CAPS
☐The "Learning Machine" ... *math tutor program*
☐Kilobaud Klassroom ... *No 7 transistors, diodes and op amps*
☐Compleat Guide to Logic Diagrams
☐Tiny BASIC
☐The Twelve Days of Christmas
☐Paper Tape It's Here to Stay ... *a look at the OP-80A*
☐Tempus Fugit
☐Who Needs a Broker?
☐Here's HUEY! ... *super calculator for the 6502*
☐Crash Landing! ... *a real-time Lunar Lander game*
☐File Structures Simplified

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☐ **Business Applications**
☐ **Growing with KIM** . . . *expansion PC board*
☐ **Has Godbout Done It Again?** . . . *Econoram II: $150 assembled*
☐ **The TRS-80: how does it stack up?**
☐ **A Tale of Four BASICs**
☐ **Hardware Program Relocation**
☐ **TVT Hardware Design**
☐ **Understanding Loaders**
☐ **Kilobaud Klassroom** . . . *No. 8: pulses—and more pulses*
☐ **Help for Beginning Programmers**
☐ **Your Imsai and You**
☐ **Rocket Pilot** . . . *an interactive game for the Apple-II*
☐ **Micro Maestro**
☐ **Software Keyboard Interface**
☐ **Morrow's I/O Cassette Board**
☐ **It's Your Hobby!**

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☐ **Build the "Simple Computer"** . . . *a home-brew 8080*
☐ **Hardware Program Relocation, Part 2**
☐ **State Capitals**
☐ **Customized MIKBUG**
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Foolproof Cassette Operation
☐ **Number-Crunching Time**
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☐ **Consumer Computer, Inc.**
☐ **Programmed Instruction Made Easy: Tiny PILOT, Part 1**
☐ **Protect Your Memory Against Power Failure**
☐ **Backup Techniques** . . . *how fail-safe is your system?*
☐ **Small Business Software, Part 2**
☐ **Expand Your KIM!** . . . *Part 4: a TTY substitute*
☐ **Faster Erase Times** . . . *build a quicker EPROM eraser*
☐ **I/O Programming for the Altair Disks**
☐ **The Axiom EX-800**
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☐ **Temperature Sensing**
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☐ **A Tour of the Faire, Part 2**
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☐ **Heath's Experimenter's Breadboard**
☐ **Draw Dazzling Color Graphics** . . . *routines for Cromemco's Dazzler*
☐ **Atwood Memory for Your KIM**
☐ **MIKBUG with Muscle!**
☐ **Little Bits** . . . *strings, statements, routines*
☐ **Cook's Memory Test** . . . *for the 8080*
☐ **An S-100 Front Panel Replacement**
☐ **Home-Brew Z-80 System** . . . *Part 2: CPU and memory board*
☐ **Battleship!**
☐ **Improvements Make the Difference** . . . *SWTP's new system*
☐ **Simple and Low-Cost PROM Programmer**
☐ **Compatibility and the Altair Bus**
☐ **Retail Pricing System**

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☐ **DOCUFORM: A Word-Processing System for Everyone!**
☐ **Kilobaud Klassroom** . . . *No. 11: Data and Address Buses*
☐ **Software Debugging for Beginners**
☐ **Mits vs North Star**
☐ **Kansas City Standard** . . . *at 1200 baud*
☐ **Swords and Sorcery!**
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☐ **Update: Lunar Lander**
☐ **The Do-It-Yourself System** . . . *Heath's H8 is a winner!*
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☐ **Is There Intelligent Life in Your Computer Room?**
☐ **From Base to Base** . . . *with your HP 25*
☐ **FINANC: A Home/Small-Business Financial Package**
☐ **Computer-Generated Signs**
☐ **Copying Computer Cassettes**
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☐ **The Amazing 1802**
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☐ **Can't Find It?** . . . *an index for your SWTP BASIC manual*

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☐ **(Con)text Editor**
☐ **At Last: A Client Timekeeping System**
☐ **Troubleshooters' Guide**
☐ **Metric-American Conversion Program**
☐ **The Heath/DEC Connection** . . . *Part 1: overview*
☐ **Home System Demo Program**
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☐ **Tally Ho!** . . . *fox and hounds game*
☐ **Baudot Interface Cookbook**
☐ **Error-Correcting Techniques**
☐ **KIM Organ**
☐ **Kilobaud Klassroom** . . . *No. 12: ROM and RAM memories*
☐ **Motorola's Latest: The MC6802**
☐ **TRS-80 Update: Level II BASIC**
☐ **Super Cheap 2708 Programmer**
☐ **Something Extra in Mass Storage** . . . *Meca's Alpha-1*
☐ **From Big BASIC to Tiny BASIC**

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☐ **Budget System** . . . *KIM, keyboard, TV, TVT-6L and AKIM*
☐ **The Heath/DEC Connection** . . . *Part 2: H11 system peripherals*
☐ **Depreciation Calculations**
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☐ **Kilobaud Klassroom** . . . *No. 13: I/O Circuitry*
☐ **Let Your Computer Wear a Watch**
☐ **Randomness is Wonderful**
☐ **Dazzler and BASIC**
☐ **The Latest in Operating Systems for the 6800: FLEX**
☐ **Action on the Enterprise**
☐ **Will DEC and IBM Be the Final Winners?**
☐ **Little Bits**
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☐ **Use That Parity Line!**
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☐ **A "Gift" That Keeps on Giving**
☐ **The Art of Generating Expense Reports**
☐ **Deep, Dark Secrets of the TRS-80 (Level I)**
☐ **Interfacing the Elf II**
☐ **The Care and Feeding of Cassette Tapes, Part 1**
☐ **Kilobaud Klassroom** . . . *No. 15: computer I/O III*
☐ **Raster Scan Graphics for the 6800** . . . *Part 2: the software*
☐ **SWTP 4K RAM Write Protect Option**
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☐ **The Ups and Downs of Business**
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☐ **How to Write Good Application Programs**
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☐ **Scratched Diskette?**

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☐ An Editor for 6800 BASIC Programs
☐ u-Panel for KIM
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☐ The BCS and Its President
☐ Address List Editor
☐ Display Your PET!
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☐ Block-Structured Language for Microcomputers
☐ Kilobaud Klassroom, No 16: I/O IV
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☐ Music, Maestro!
☐ Madam Dupre's House of the Zodiac
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☐ Onward with the COSMAC Elf!
☐ Build a $50 TVT!
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☐ Learn BASIC—with BASIC
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☐ Attack on the Pack!

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☐ Cheap Video for Your Heathkit H8
☐ Analog and Digital Interfaces
☐ The "El Cheapo" EPROM Programmer
☐ Is Your Video Monitor Dangerous?
☐ Thoughts on the SWTP Computer System
☐ PET User Port Cookbook
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☐ Keyboard Interrupt for the TRS-80
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☐ A Look at TRS-80 Peripherals
☐ Heath H8 Disk System
☐ DOTS (Part 2)
☐ Truly Random Numbers
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☐ Who Sells Software?
☐ How Important Is Proper Termination?
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☐ Depreciation Analysis
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☐ TRS-80/Selectric Word Processor
☐ Thoughts on the SWTP Computer System (2)
☐ New Life for Our Altair
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. . . and more!

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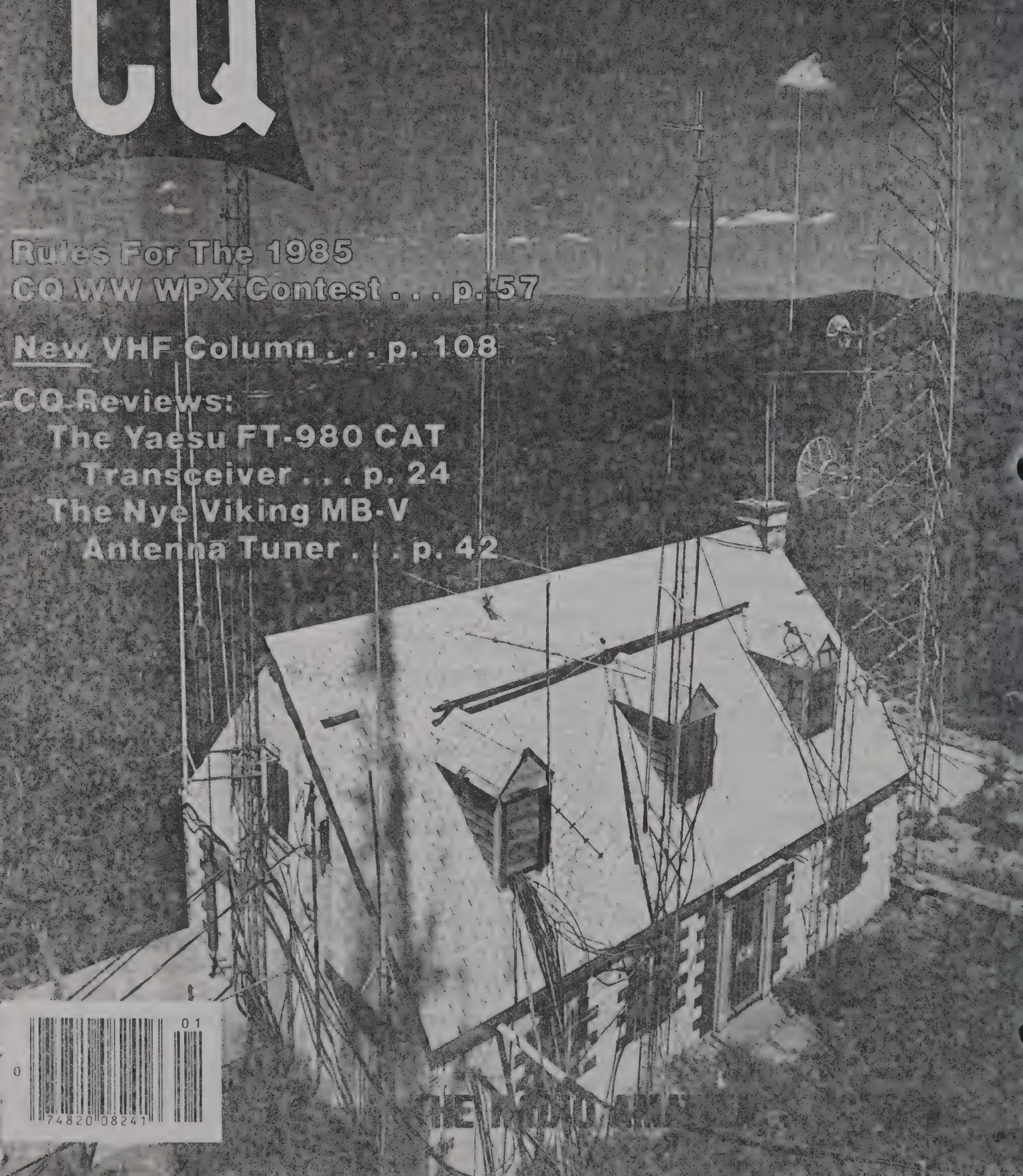

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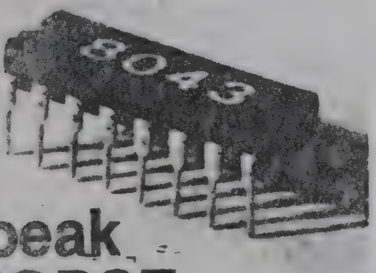

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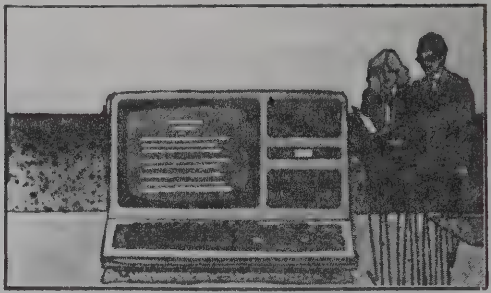

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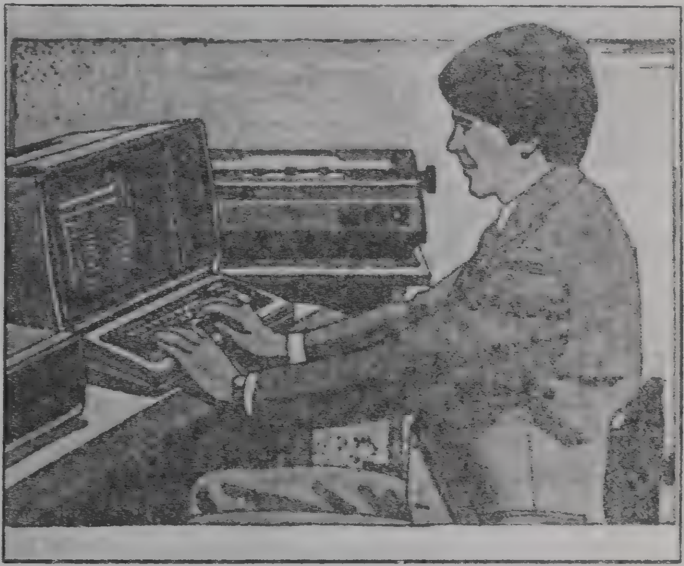

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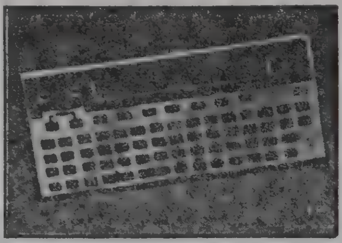

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Basic Computing
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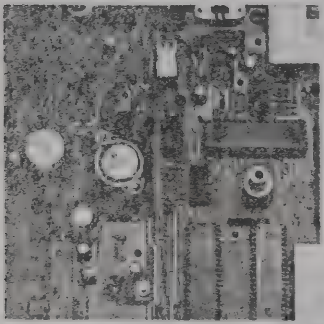
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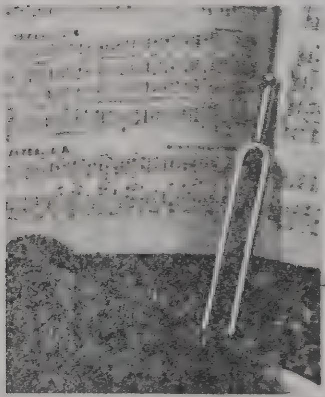
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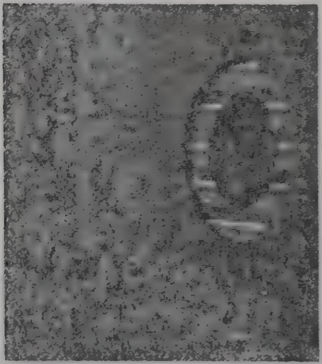
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112/Graphics? Yes! Part III by Scott Bain and Andrea Chartier *(Graphics)*
Turn your computer into a drawing board.

119/Disk-X Utility by Bruce K. Bell, O.D. *(Utility)*
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COLOR COMPUTER

1983 Article Index

Category	Issue	Pg. No.	Title of Article	Author	Description
Communications:	03/83	014	Hello World!	Bob Rosen	The right software package, a modem, a telephone, and this article will turn your computer into a communications device.
Construction:	07/83	012	CC Furniture	Brian H. Alsop	Neaten up your computer room: we've got the plans to show you how.
	08/83	022	Indoor/Outdoor Thermometer	Theodore Hasenstaub	Hey, it's really cold outside—and in here! Just how cold is it? Turn your CC into a fancy thermometer.
Education:	03/83	048	Tick Talk	Richard Ramella	Using a standard clock face and some good old fashioned advice, teach your child how to get home in time.
	04/83	038	CC Speller	Lynn Davis	Learning how to spell was never this much fun. Input a spelling list and let your child have a go at it.
	05/83	010	Language Teacher	Scott L. Norman	Parlez-vous Basic? Doesn't matter, that's not the language we have in mind. French, Spanish, German are!
	05/83	048	Musical Flash Cards	R.F. Miller	A program to teach youngsters (and oldsters) music, note by note. The Program, NoteCard, uses graphics…
	06/83	026	Math Drill	James Sanford	This program will teach math to students of different grade levels.
	08/83	018	GOTO SCHOOL—Series	Dr. Paul Kimmelman	Teachers! Ever wonder what a computer can really do for you and your students?
	09/83	074			
	10/83	074			
	11/83	074			
	12/83	044			
	08/83	052	Learning Games	David Stevens	These spelling and state capital teaching games are too much fun to restrict to kids.
	09/83	015	Your Color Computer—A Tutor	Shirley Georgi	A computer in the hands of a skilled teacher is better than no computer and an overworked teacher.
	09/83	032	Color Computing for Kids—Series	Jean Plesser	What's better than peanut butter? This series, teaching kids how to use a Color Computer.
	10/83	049			
	11/83	020			
	12/83	023			
	09/83	064	Children's Computer Workshop	Kerry Leichtman	What do Sesame Street and Radio Shack have in common?
	09/83	099	Teaching Computers to Teach	J. Craig Dickinson	Color Logo makes computer literacy easy and fun.
Fiction:	06/83	040	The Restaurant at the End of the Universe	Douglas Adams	Chapter 3 excerpted from the second book of the bestselling sci-fi trilogy, *The Hitchhiker's Guide To The Galaxy*.
Finance:	08/83	030	Flexible Amortization	Mel Seder	Make your banker jealous with this program that will make any amortization program easier
Game:	03/83	024	Field of Honor	Scott L. Norman	Your squire readies your mount as your opponents line up to battle you for the hand of one of the king's daughters.
	04/83	008	Musical Tales	Robert Toscani	A game for the verbose. Collaborate with your computer to write a story and then put your prose to music.
	04/83	032	The Sorcerer's Puzzles—Series	Richard Ramella	The first step in becoming a Sorcerer's apprentice is solving these brain-teasing puzzles.
	07/83	032			
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	11/83	034			
	05/83	040	Space Trek	Commander & Leichtman	Stardate 2906. The galaxy once again is endangered by Klingon warships. Only you, Captain, can save mankind.
	08/83	048	GO SUB Destroy	Robert Toscani	Sub Destroy for 4K machines—what more could a fleet captain want? Many difficulty levels.
	08/83	078	Cliché	George Aftamonow	Here's a game that will show off your computer at parties, and keep your guests laughing and guessing.
	10/84	064	Orbit!	Tom Goodrick	This game is really a simulation that will require all your skill.
	10/83	107	Cryptography	Robert L. Garrett	Here's another game that really is—or can be—serious business.
	11/83	046	Slither	Stephen P. Allen	Slip-Sliding Away.
	12/83	063	Dreidel	Harold Schneider	Computerize this top game for your kids, and for you.
	12/83	072	DEFENSE!	Shawn Diehl and Jim McDowell	Protect your cities & fortress from missiles and aliens.
Game Fix:	07/83	046	Damage Report, Mr. Scott	Jamie Tietjen	CC Space Trek for non-disk users.
General:	03/83	009	Congratulations, You Own an Incredible Machine!	Jake Commander	Being taken on a tour of your Color Computer with Jake is like traveling the Mississippi with Mark Twain.
	06/83	019	Computer Club Primer	Shawn Jipp	How to organize the Color Computerists in your area into a Users Group.
	06/83	030	How to Shop for Equipment	Keith Baker	Avoid costly mistakes by applying smart shopping awareness to your computer purchases.
	07/83	048	Family Outing—Computer Style	Tim & Debra Cole	Observing the Color Computer Club of Youngstown, OH in action.
	08/83	012	One More Computer	Jyym Pearson	Learn why an Adventure programmer feels the Color Computer is more of a Ferrari than a Pinto.
	09/83	095	The Jargon Generator	Glenn Knight	Talk to bureaucrats, technocrats and pseudocrats in their own languages.
	09/83	108	DEFUSR—Series	Terry Kepner	A question and answer column.
	10/83	102			
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	10/83	014	Tools	Brian Alsop	Here's what you need on hand to do simple hardware projects.
	10/83	024	New Machine	Kerry Leichtman	Radio Shack has two important new products.
	11/83	083	My MC-10 Speaks ML!	McFadden & Kelley	Machine language on the MC-10.
	12/83	018	Topo, Armotron, Poorbot and "Mim"	Tom Juergens	Color Computers talking to robots? Why not!
	12/83	124	Country Cousin	John C. Grier	Georgraphically isolated? Contact the outside world.
Graphic Utility:	06/83	046	Custom Color	Dennis Kitsz	Create a neat, clean, scrolling display for your store, school, home, or just to show off your computer.
Graphics:	03/83	020	Chapter 7	William Barden, Jr.	This excerpt from Bill's book, *Color Computer Graphics* examines the Draw command.
	03/83	032	Spiral Galaxy	Lynn Davis	Create a galaxy using polar graphing techniques. Watch stars explode, and the birth of the universe.
	05/83	025	Color Animation	William Barden, Jr	Age-old animation techniques combine with sound programming methods to create moving graphics.
	06/83	032	Color Animation	William Barden, Jr	Part I showed you how to animate in Basic. This final installment applies the techniques to machine language.
	06/83	064	Rectangle.	Lynn Davis	Teach your computer to doodle.
	07/83	039	DYE It	H. Allen Curtis	Add a new graphics command to your programming repertoire.
	10/83	094	Graphics? Yes!—Series	S. Bain & A. Chartier	This is the first of a series on graphics aimed at beginners.
	11/83	104			
	12/83	112			
	11/83	065	Unforgettable Characters	William Barden, Jr.	User-definable graphics.
	12/83	100			
	11/83	015	Super Spiro!	Jake Commander	Super and hyper-spirographics!
	11/83	031	Star	David Lauta	A short, sweet graphics treasure.
	12/83	050	Display Modes	Steve Bjork and Mark Randall	Double the number of your hi-res colors.

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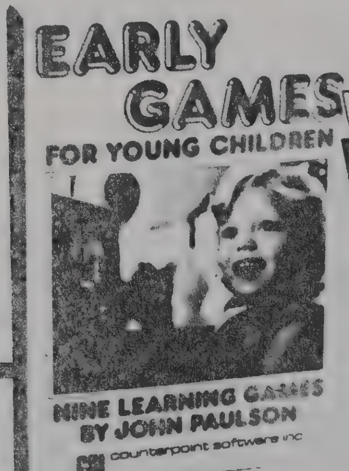
Category	Issue	Pg. No.	Title of Article	Author	Description
Hardware:	03/83	040	Custom Color	Dennis Kitsz	Upgrade your computer from 4K to 16K, and 16K to 32K. Also install the circuitry to connect to a color monitor.
	04/83	028	Custom Color	Dennis Kitsz	Connect your Color Computer to other electrical devices. First in a two-part series.
	05/83	016	Install a Power-on Light	Tom Garcia	Complete this easy and inexpensive project and you'll never accidently leave your computer on overnight.
	05/83	055	Custom Color	Dennis Kitsz	With all the theory explained in April's issue, it's now time to put it all to use.
	07/83	016	Custom Color	Dennis Kitsz	Blow the doors off 64K with a 128K bubble memory upgrade
	08/83	033	Custom Color	Dennis Kitsz	Ever wished your computer could produce characters in Kata Kana? Dennis show us how-and doesn't stop there.
	09/83	078	Custom Color	Dennis Kitsz	Give your MC-10 more memory.
Home Mgmt:	03/83	028	Your Basic DBM	Paul Detwiler	Managing your records is simple and quick with this very basic file manager.
	05/83	036	How to Borrow Money	Paul Detwiler	Use the program to better understand the amortization schedule of money lent to you.
	06/83	060	Sweet Add-A-Line	Richard Ramella	Make itemizing shoebox-stored receipts easier using this personal accounting program.
	09/83	102	Refunding	Brian Alsop	Saving money's important—now you can save time saving money.
Sound:	07/83	068	Zounds! Sounds!	William Barden, Jr	Teach your Color Computer to speak up.
Tutorial:	06/83	036	How to Write Good Documentation	Kathleen Gill	Adventure Intl's documentation writer Gill explains the do's and don'ts of writing program documentation.
	07/83	055	Dissecting Your Rom—Series	Jake Commander	The first of a 12-part series examining the Color Computer ROM, bit by bit.
	08/83	071			
	09/83	042			
	10/83	057			
	12/83	032			
	07/83	064	What is Color Disk Basic?	Franklyn D. Miller	A guide to help you decide if Disk Basic is for you before you spend the money.
	09/83	049	Talk Together	Bill Barden	Make your MC-10 and your Color Computer share programs
	11/83	090	Custom Color	Dennis Kitsz	Part I of the most incredible computer music you ever heard.
	12/83	082	Custom Color	Dennis Kitsz	More music programming from the maestro.
Utility:	03/83	016	Stash a Directory	Douglas L. Swank	One short utility to hide an extra disk directory and another to find it if the original ever bombs out.
	04/83	015	Reformat Your Video	Steve Odneal	Expand your video screen from 32 to 51 characters per line, and get a true upper/lowercase character set...
	04/83	046	The Map	Jake Commander	Programming in machine language made easier. The most complete Color Computer memory map ever published.
	05/83	019	Condense Your Programs	D.E. Wood	By using multi-line statements, you can increase program execution speed and conserve memory.
	06/83	068	Color Disassembler	Jake Commander	Assembly-language programmers rejoice, here's a disassembler just for you.
	07/83	052	GOTO Where?	D.E. Wood	Use this utility to trace your program's routes.
	08/83	060	Wide Printing	Robert Lake	Color Scripsit takes on a new look with this w-i-d-e printing.
	08/83	066	RECOVER!	Kenneth Van Camp	No..No! Don't hit that Reset button! Oh—too late. Or is it? This program can help you out.
	11/83	096	One-Finger Hexload	Jim Norman	Save time storing and editing hex byte lists.

➧ *more*



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1983 Reviews Index

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Directory of Hardware Manufacturers and Distributors

It's difficult to keep track of all the products now available for Radio Shack computers. *80 Micro* has compiled a list of manufacturers and distributors of TRS-80-compatible hardware and software. The first half of the directory, covering hardware only, is below. The software directory will appear in a forthcoming issue. Manufacturers are listed first, followed by distributors (in alphabetical order).

Note: Only those companies that responded to the directory questionnaire are included.

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Direct-connect modems

MTS Enterprises
P.O. Box 596
Niceville, FL 32578
904-678-3328
Power strips
Printer cables

Mumford Micro Systems
Box 400
Summerland, CA 93067
805-969-4557
Clock speed-up

MWB Industries Inc.
2013 Franklin St.
Detroit, MI 48207
313-259-1104
Screen cleaning cloths

Nat Hellman Inc. Computer Associates
400 S. Beverly Drive Suite 214
Beverly Hills, CA 90212
213-273-0133
Keyboard dust covers

Omikron Systems
11127 Hearst Ave.
Berkeley, CA 94702
415-845-8013
Add-on/add-in memories
Converters
CP/M for Models I and III

Orion Instruments
172 Otis Ave.
Woodside, CA 94062
415-851-1172
EPROM programmers
In-circuit emulators

P. Tree Associates
Suite 269, 2701-C W. 15th St.
Plano, TX 75075
214-867-5656
Disk holders

Pacific Office Systems of Mountain View
2265 Old Middlefield Way
Mountain View, CA 94043
415-493-7455
Controllers, interfaces
Controller and formatter for nine-track magnetic tape drives.

Pel/Tek
P.O. Box 1026
Southampton, PA 18966
215-947-2334
Disk organizer

Percom Data Corp.
11220 Pagemill Road
Dallas, TX 75243
214-340-7081
Floppy disk drives
Hard disk drives

Personal Micro Computers Inc.
475 Ellis St.
Mountain View, CA 94943
415-962-0220
Cassette recorders
Cassettes
Disks
EPROM programmer
Floppy disk drives
Monitors
Printer buffers
Printers
ROM extender

Pion Inc.
74 Appleton St.
Arlington, MA 02174
617-648-1717
Hard disk drives
Solid state disk emulators

Powersoft, Div. of Breeze/QSD Inc.
11500 Stemmons Expwy., Suite 125
Dallas, TX 75229
214-484-2976
Joysticks, paddles

Process Control Technology
8030 Lorraine Ave., -328
Stockton, CA 95210
209-952-6576
Controllers, interfaces
Floppy disk drives

Programmer's Institute
P.O.Box 3191
Chapel Hill, NC 27514
919-967-0861
Color Computer keyboard

Prototype Machine Works
7741 Alabama Ave. -8
Canoga Park, CA 91304
213-346-6711
Controllers, interfaces
Plotters

R.I.S.T. Computer Components Inc.
P.O. Box 499
Fort Hamilton Station
Brooklyn, NY 11209
212-680-3093
Voice synthesizers

Rabco Enterprises
806 Freedom Circle
Harleysville, PA 19438
215-368-4866
Plotters

Racet Computes, Ltd.
1330 N. Glassell, Suite M
Orange, CA 92667
714-997-4950
Controllers, interfaces
Data switcher
Hard disk drives
Multiplexers

Rainbow Software Services Ltd.
7070B Farrell Road SE
Calgary, Alberta Canada T2H-0T2
403-253-6142
Add-on/add-in memories
Cables
Connectors
Direct-connect modems
Joysticks, paddles

REM Industries Inc.
9420 B Lurling Ave.
Chatsworth, CA 91311
213-341-3719
Cooler fan for Color Computer
Covers
Disk containers
Disk file with locking lid
Fans
Hard keyboard covers
Mobile printer stand
Stringy/floppy container with locking lid

Riverlake Systems Inc.
P.O. Box 1927
Roswell, GA 30077
404-475-0028
EPROM and PROM programmers

Sandpiper Software
P.O. Box 336
Maynard, MA 01754
617-568-8641
Cassette duplicators
Cassettes

See-Thru Enterprises
933 Frank Ave.
Windsor, Ontario Canada N8S 3P4
519-735-2995
Connectors
Green filter

Semidisk Systems
P.O. Box GG

Beaverton, OR 97075
503-642-3100
Add-on/add-in memories
Disk emulator

Small System Design
225A Lowell Road
Hudson, NH 03051
603-880-1322
Converters

Software Affair
858 Rubis Drive
Sunnyvale, CA 94087
408-730-1030
Music synthesizers

Software Concepts
105-106 Preston Valley S.C.
Dallas, TX 75230
214-458-0330
Cables
Joystick, paddles

Southern Innovative Design
1520 NE 12th St.
Gainesville, FL 32601
Optical display filters

Spectral Associates
141 Harvard Ave.
Tacoma, WA 98466
206-565-8483
Add-on/add-in memories
Floppy disk drives
Monitors
Voice synthesizers

Star Micronics Inc.
200 Park Ave., Suite 2309
New York, NY 10166
212-986-6770
Printers

Starbuck Data Co.
P.O. Box 24
Newton Lower Falls, MA 02162
617-237-7695
Analog and digital data acquisition devices
Controllers, interfaces
General purpose device control

Street Electronics Corp.
1140 Mark Ave.
Carpinteria, CA 93013
805-684-4593
Voice synthesizers

Sun Research Inc.
Old Bay Road
New Durham, NH 03855
603-859-7110
Uninterruptible power supply

Total Access
P.O. Box 3002
Richardson, TX 75080
214-458-1966
Acoustic modems
Add-on/add-in memories
Bulk erasers
Cables
Cassette recorders
Controllers, interfaces
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Joysticks, paddles
Monitors
Plotters
Printer buffer
Printer ribbons
Printers

Universal Data Research Inc.
2457 Wehrle Drive
Buffalo, NY 14221
716-631-3011
Acoustic modems
Direct-connect modems

Voicetek
P.O. Box 388
Goleta, CA 93116
Voice recognition
Voice synthesizers

VR Data Corp.
777 Henderson Boulevard
Folcroff, PA 19032
215-461-5300
Cables
Controllers, interfaces
Floppy disk drives
Hard disk drives

Williams Enterprises
3101 Cheverly Ave.
Cheverly, MD 20785
301-773-3015
Add-on color screens
Disk boxes

Xitex Corp.
9861 Chartwell
Dallas, TX 75243
214-349-2491
Controllers, interfaces
Converters

Hardware Manufacturers by Product

Acoustic Modems
Action Computers
Holmes Engineering
Master Electronics Inc.
Micromint Inc.
Total Access
Universal Data Research Inc.

Add-On/Add-In Memory
Action Computers
Apparat Inc.
Bi-Tech Enterprises
Compulink Corp.
Computerware
Control Craft Inc.
DSI/Cyzern
EAP Co.
Heart of Texas Computer Systems Inc.
Holmes Engineering
Hurricane Laboratories Inc.
JMR Electronics
LNW Research Corp.
Master Electronics Inc.
Micro Data Supplies
Micro Projects Engineering Co.
Micro-Design
Micro-Labs Inc.
Microhatch
The Micro Works Inc.
Omikron Systems
Rainbow Software Services Ltd.
Semidisk Systems
Spectral Associates
Total Access

Bulk Erasers
Action Computers
Bi-Tech Enterprises
Master Electronics Inc.
Total Access

Cables
A.M. Electronics Inc.
Action Computers
Aerocomp Inc.
Alpha Products
Apparat Inc.
Bi-Tech Enterprises
Computerware
Creative Computer Center
DSI/Cyzern
EAP Co.
Eigen Systems
Freedom Micro-Systems Inc.
Holmes Engineering
ICM Industries
JMR Electronics
Libra Laboratories Inc.
Lobo Drives International
Master Electronics Inc.
Matchless Systems
Micro Data Supplies
Micro Mainframe
MTS Enterprises

Continues

Continued

- Rainbow Software Services Ltd.
- Software Concepts
- Total Access
- VR Data Corp.

Cassettes

- Action Computers
- Cook Laboratories Inc.
- Master Electronics Inc.
- Micro-80 Inc.
- Personal Micro Computer Inc.
- Sandpiper Software

Cassette Recorders

- Action Computers
- Master Electronics Inc.
- Personal Micro Computer Inc.
- Total Access

Connectors

- Action Computers
- Alpha Products
- DSI/Cyzern
- EAP Co.
- Holmes Engineering
- Libra Laboratories Inc.
- Master Electronics Inc.
- Rainbow Software Services Ltd.
- Racet Computes Ltd.
- See-thru Enterprises

Controllers, Interfaces

- A. M. Electronics Inc.
- Action Computers
- Aerocomp Inc.
- Alamo Computer Co.
- Alpha Products
- Alphanetics
- Apparat Inc.
- Binary Devices
- Compulink Corp.
- Compuware Corp.
- Control Craft Inc.
- Data Match Corp.
- DSI/Cyzern
- Heart of Texas Computer Systems Inc.
- Holmes Engineering
- Interface Inc.
- Interface Technology
- J.E.S. Graphics
- JMR Electronics
- J & M Systems Ltd.
- Laredo Systems Inc.
- Libra Laboratories Inc.
- LNW Research Corp.
- Lobo Drives International
- Micro Mainframe
- Pacific Office Systems of Mountain View
- Process Control Technology
- Prototype Machine Works
- Racet Computes Ltd.
- Starbuck Data Co.
- Total Access
- VR Data Corp.
- Xitex Corp.

Converters

- Action Computers
- Alpha Products
- Connecticut Microcomputer
- DSI/Cyzern
- Holmes Engineering
- J.E.S. Graphics
- Libra Laboratories
- Micro Projects Engineering Co.
- Omikron Systems
- Small System Design
- Xitex Corp.

CRT Terminals

- Action Computers
- DSI/Cyzern
- Holmes Engineering
- Hurricane Laboratories Inc.
- Langley-St. Clair Instrumentation

Digitizers

- Alpha Products
- DSI/Cyzern
- Lemons Tech Services
- Master Electronics Inc.

Direct-Connect Modems

- Action Computers
- Communications Electronics
- DSI/Cyzern
- Hayes Microcomputer Products Inc.
- Holmes Engineering
- Master Electronics Inc.
- Micro-Design
- Micro Mainframe
- The Microperipheral Corp.
- Rainbow Software Services Ltd.
- Total Access
- Universal Data Research Inc.

Disks

- Action Computers
- Communications Electronics
- Khadin & Co.
- Master Electronics Co.
- Micro Data Supplies
- Micro-Design
- Micromint Inc.
- Personal Micro Computers Enc.
- Total Access

Floppy Disk Drives

- A.M. Electronics Inc.
- Action Computers
- Aerocomp Inc.
- Apparat Inc.
- DSI/Cyzern
- Heart Of Texas Computer Systems Inc.
- Holmes Engineering
- Interface Inc.
- JMR Electronics
- Lobo Drives International
- Master Electronics Inc.
- Matchless Systems
- Micro Mainframe
- Micro-Design
- Percom Data Corp.
- Personal Micro Computers Inc.
- Process Control Technology
- Spectral Associates
- Total Access
- VR Data Corp.

Hard Disk Drives

- A.M. Electronics Inc.
- Action Computers
- Bi-Tech Enterprises
- H & E Computronics
- Heart of Texas Computer Systems Inc.
- Holmes Engineering
- Interface Inc.
- J & M Systems Ltd.
- Laredo Systems Inc.
- Lobo Drives International
- Master Electronics Inc.
- Micro Mainframe
- Percom Data Corp.
- Pion Inc.
- Racet Computes Ltd.
- Total Access
- VR Data Corp.

Joysticks, Paddles

- Action Computers
- Alpha Products
- Big Five Software
- DSI/Cyzern
- Endicott Software
- Horizons Software
- JES Graphics
- Master Electronics Inc.
- Micro Mainframe
- Powersoft, Div. of Breeze/QSD Inc.
- Rainbow Software Services Ltd.
- Software Concepts
- Total Access

Monitors

- Action Computers
- DSI/Cyzern
- Personal Micro Computers Inc.
- Spectral Associates
- Total Access

Multiplexers

- Action Computers
- Bi-Tech Enterprises
- DSI/Cyzern
- Master Electronics Inc.
- Micro Mainframe
- Racet Computes Ltd.

Plotters

- Master Electronics Inc.
- Prototype Machine Works
- Rabco Enterprises
- Total Access

Print Buffers

- Action Computers

Apparat Inc.
Compulink Corp.
Creative Computer Center
Data Match Corp.
DSI/Cyzern
HF Signalling Inc.
Holmes Engineering
Micro Mainframe
Personal Micro Computers Inc.
Total Access

Printers
Action Computers
Epson America Inc.
Master Electronics Inc.
Matchless Systems
Micro Electronics Inc.
MTS Enterprises
Personal Micro Computers Inc.
Star Micronics Inc.
Total Access

Printer Ribbons
Action Computers
Bi-Tech Enterprises
Communications Electronics
Creative Computer Center
Data Systems
Khadin & Co.
Master Electronics Co.
Total Access

Printer Terminals
Action Computers
Epson America Inc.

Voice Synthesizers
DSI/Cyzern
JMR Electronics
Master Electronics Inc.
Micromint Inc.
R.I.S.T. Computer Components Inc.
Spectral Associates
Street Electronics Corp.
Voicetek

Hardware Distributors

ABC Data Products
8868 Clairemont Mesa Boulevard
San Diego, CA 92123
800-854-1555
Cables
Cassettes
Connectors
Disks
Furniture
Printer ribbons
Storage supplies

Action Computers
85 Factory St.
Nashua, NH 03062
603-883-5369
Acoustic modems
Add-on/add-in memories
Bulk erasers
Cables
Cassette recorders
Cassettes
Connectors
Controllers, interfaces
Converters
CRT terminals
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Joysticks, paddles
Monitors
Multiplexers
Parts for hardware
Printer buffers
Printer ribbons
Printer terminals
Printers

Alamo Computer Co.
1234 Avant
San Antonio, TX 78210
512-534-7782
Add-on/add-in memories
Controliers, interfaces
Floppy disk drives
Hard disk drives
Printers

Alpha Products
79-04 Jamaica
Woodhaven, NY 11421
212-296-5916
Connectors
Controllers, interfaces
Converters
Digitizers
Disks
Joysticks, paddles

The Alternate Source
704 N. Pennsylvania Ave.
Lansing, MI 48906
800-248-0284
Add-on/add-in memories
Books
Cables
Cassettes
Controllers, interfaces
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Joysticks, paddles
Printer buffers
Printer ribbons
Printer terminals

A.M. Electronics Inc.
3446 Washtenaw Ave.
Ann Arbor, MI 48104
313-973-2312
Cables
Controllers, interfaces
Floppy disk drives
Hard disk drives

American Small Business Computers
118 S. Mill St.
Pryor, OK 74361
918-825-4844
Acoustic modems
Add-on/add-in memories
Cables
Cassette recorders
Cassettes
Connectors
Converters
CRT terminals
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Monitors
Printer buffers
Printer ribbons
Printers

Amflex Products and Services
P.O. Box 852
Adrian, MI 49221
517-423-7112
Acoustic modems
Cables
Cassette recorders
Cassettes
Computers
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Printer ribbons
Printers

Apparat Inc.
4401 S. Tamarac Parkway
Denver, CO 80237
303-741-1778
Acoustic modems
Add-on/add-in memories
Cables
Cassettes
Controllers, interfaces
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Joysticks, paddles
Monitors

Continues

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Continued

Printer ribbons
Printers

Baudy House
950 Scott Lake Road
Pontiac, MI 48054
313-683-8388
- Acoustic modems
- Cables
- Cassette recorders
- Cassettes
- Controllers, interfaces
- CRT terminals
- Direct-connect modems
- Disks
- Floppy disk drives
- Hard disk drives
- Joysticks, paddles
- Monitors
- Multiplexers
- Printer buffers
- Printer ribbons
- Printer terminals
- Printers

Bi-Tech Enterprises
10B Carlough Road
Bohemia, NY 11716
516-567-8155
- Acoustic modems
- Add-on/add-in memories
- Books
- Bulk erasers
- Cables
- Cassettes
- Connectors
- Controllers, interfaces
- Direct-connect modems
- Disk drive cases
- Disks
- Doublers
- Floppy disk drives
- Hard disk drives
- Multiplexers
- Power supplies
- Printer buffers
- Printer ribbons
- Printer stands
- Printers
- Speed-up kits
- Voltage protectors

Binary Devices
11560 Timberlake Lane
Noblesville, IN 46060
317-842-5020
- Controllers, interfaces

CECDAT Inc.
Box 497
Hayden Lake, ID 83835
208-772-9571
- Character generator
- Lowercase modification

Cheever Microware
4120 McKnight Road
Texarkana, TX 75503
214-832-4251
- Acoustic modems
- Cables
- Cassettes
- Direct-connect modems
- Disks
- Floppy disk drives
- Hard disk drives
- Printer buffers
- Printer ribbons
- Printers

CMD Micro Computer Services Ltd.
10447-124 St.
Edmonton, Alberta, CanadaT5N 1R7
403-488-7109
- Add-on/add-in memories
- Cables
- Cassettes
- Controllers, interfaces
- Direct-connect modems
- Disks
- Floppy disk drives
- Joysticks, paddles
- Printer ribbons
- Printers

Cole's Consultants Inc.
94-165 Leokane St.
Waipahu, HI 96797
808-677-3380
- Data and copy conditioners

Color Software Services
P.O. Box 1708
Greenville, TX 75401
214-454-3674
- Cassette recorders
- Cassettes
- Direct-connect modems
- Disks
- Joysticks, paddles
- Hard disk drives
- Plotters
- Printers

Communications Electronics
Box 1002-Dept. WG
Ann Arbor, MI 48106
313-994-4444
- Direct connect modems
- Disks
- Printer ribbons

Computer Case Co.
5650 Indian Mound Court
Columbus, OH 43213
614-868-9464
- Cases

Computer Center
31 E. 31st St.
New York, NY 10016
212-889-8130
- Acoustic modems
- Cables
- Cassettes
- Connectors
- CRT terminals
- Direct-connect modems
- Disks
- Floppy disk drives
- Joysticks, paddles
- Monitors
- Multiplexers
- Printer buffers
- Printer ribbons
- Printers
- Voice synthesizers

Computer Generated Data,
Division of Wagener Enterprises
5541 Parlaiment Drive, Suite 206
Virginia Beach, VA 23462
804-497-1165
- Add-on/add-in memories
- Cables
- Cassette recorders
- Cassettes
- CRT terminals
- Disks
- Floppy disk drives
- Hard disk drives
- Monitors
- Printer ribbons
- Printer terminals
- Printers

Computer Peripheral Resources
P.O. Box 834-9105-925E
Oak Harbor, WA 98277
206-679-1299
- Floppy disk drives

Computer Services of Danbury
P.O. Box 993, 1 Franklin St.
Danbury, CT 06810
203-743-1299
- Acoustic modems
- Add-on/add-in memories
- Direct-connect modems
- Disks
- Floppy disk drives
- Joysticks, paddles
- Printer buffers
- Printer ribbons
- Printers

The Computer Store Inc.
5153 S. Peoria
Tulsa, OK 74105
918-747-9333
- Acoustic modems
- Add-on/add-in memories
- Bulk erasers
- Cables
- Cassette recorders
- Cassettes
- Connectors

Controllers, interfaces
CRT terminals
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Joysticks, paddles
Monitors
Multiplexers
Plotters
Printer buffers
Printer ribbons
Printers
Voice synthesizers

Computerware
4403 Manchester Ave.
P.O. Box 668
Encinitas, CA 92024
714-436-3512
Acoustic modems
Add-on/add-in memories
Cables
Cassettes
Computers
Connectors
Controllers, interfaces
Converters
CRT terminals
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Joysticks, paddles
Monitors
Plotters
Printer buffers
Printer ribbons
Printer terminals
Printers

Computex
17321 Elcamino Real
Houston, TX 77058
713-488-8022
Cables
Connectors
Controllers, interfaces
Digitizers
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Monitors
Multiplexers
Plotters
Printer ribbons
Printers

Connecticut Microcomputer
36 Del Mar Drive
Brookfield, CT 06804
203-775-4595
Converters

Control Craft Inc.
P.O. Box 123
Muskego, WI 53150
414-784-9027
Color Computer ROMpack cases
Disks
EPROMs

Coosol Inc.
2845 Mesa Verde East #1
Costa Mesa, CA 92626
714-545-2216
Acoustic modems
Add-on/add-in memories
Controllers, interfaces
Converters
Digitizers
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Monitors
Multiplexers
Plotters
Printer terminals
Printers
Voice synthesizers

Creative Computer Center Inc.
1236 E. Colonial Dr.
Orlando, FL 32803
800-327-9294
Cables
Disks
Printer ribbons

D. A. and D. Sales Inc.
601 Belleville Ave.
Belleville, NJ 07109
201-751-8444
Acoustic modems
Add-on/add-in memories
Cables
Connectors
Controllers, interfaces
CRT terminals
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Monitors
Plotters
Printer buffers
Printer ribbons
Printer terminals
Printers

Data Systems
P.O. Box 99
Fern Park, FL 32730
305-788-2145
Printer ribbons

Data Technology Industries
701-A Whitney St.
San Leandro, CA 94577
415-638-1206
Add-on/add-in memories
Bulk erasers
Cables
Connectors
Controllers, interfaces
CRT terminals
Digitizers
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Multiplexers
Plotters
Printer buffers
Printer ribbons
Printer terminals
Printers

Datacom Computer Sales and Supplies
P.O. Box 02294
Cleveland, OH 44102
216-281-8820
Acoustic modems
Add-on/add-in memories
Connectors
CRT terminals
Direct-connect modems
Disks
Floppy disk drives
Hard disk drives
Monitors
Printer ribbons
Printers

DLP Co.
6798 Wetheridge Dr.
Cincinnati, OH 45230
513-232-7791
Acoustic modems
Add-on/add-in memories
Controllers, interfaces
Direct-connect modems
Printer ribbons
Printers

DSI/Cyzern
P.O. Box 1225
Fayetteville, AR 72702
501-521-0281
Bulk erasers
Cassette recorders
Cassettes
Disks
Plotters
Printer ribbons
Printers

Duck Co.
1691 Eason
Pontiac, MI 48054
800-392-8881
Add-on/add-in memories
Cables
Direct-connect modems

Continues

Continued
- Disks
- Floppy disk drives
- Hard disk drives
- Printer buffers
- Printer ribbons
- Printers

EAP Co.
P.O. Box 14
Keller, TX 76248
817-498-4242
- Add-on/add-in memories
- Cables
- Connectors
- Gold Plug 80

Lawrence S. Epstein Associates
1669 59th St.
Brooklyn, NY 11204
212-236-3173
- Add-on/add-in memories
- Connectors
- Hard disk drives
- Multiplexers

B. Erickson Software
P.O. Box 11099
Chicago, IL 60611
312-276-9712
- Color Computer EPROM/RAM pack
- Color Computer two-slot adaptor

Esmark Inc.
507 E. McKinley
Mishawaka, IN 46544
219-255-3035
- Light pens

Exatron Corp.
181 Commercial St.
Sunnyvale, CA 94086
408-737-7111
- Stringy floppies

FGA Software
74 Meyer Road
Hamilton, MA 01936
617-468-1634
- Test equipment

Fort Worth Computers and Video
377 Plaza, Hwy. 377
Granbury, TX 76048
817-573-4111
- Acoustic modems
- Add-on/add-in memories
- Bulk erasers
- Cables
- Cassette recorders
- Cassettes
- Connectors
- Controllers, interfaces
- Converters
- CRT terminals
- Digitizers
- Direct-connect modems
- Disks
- Floppy disk drives
- Hard disk drives
- Joysticks, paddles
- Monitors
- Multiplexers
- Plotters
- Printer buffers
- Printer ribbons
- Printer terminals
- Printers
- Voice synthesizers

Freedom Micro-Systems Inc.
Star Route
Wytheville, VA 24382
703-228-5800
- Add-on/add-in memories
- Cables
- Controllers, interfaces
- Disks
- Floppy disk drives
- Hard disk drives
- Printer buffers
- Printer ribbons
- Printers

Freedom Technology International
119 N. 18th St.
Philadelphia, PA 19103
215-569-2381
- Add-on/add-in memories
- Cables
- Controllers, interfaces
- CRT terminals
- Direct-connect modems
- Floppy disk drives
- Hard disk drives
- Monitors
- Printer ribbons
- Printers

E.B. Garcia and Associates
203 N. Wabash, Suite 2118
Chicago, IL 60601
312-782-9750
- Acoustic modems
- Add-on/add-in memories
- Bulk erasers
- Cables
- Cassette recorders
- Cassettes
- Connectors
- Controllers, interfaces
- Converters
- CRT terminals
- Digitizers
- Direct-connect modems
- Floppy disk drives
- Hard disk drives
- Joysticks, paddles
- Monitors
- Multiplexers
- Plotters
- Printer buffers
- Printer ribbons
- Printer terminals
- Printers
- Voice synthesizers

Good-Lyddon Data Systems
5486 Riverside Dr.
Chino, CA 91710
714-980-4563
- Add-on/add-in memories
- Cables
- CRT terminals
- Digitizers
- Direct-connect modems
- Disks
- Floppy disk drives
- Hard disk drives
- Joysticks, paddles
- Monitors
- Plotters
- Printer ribbons
- Printer terminals
- Printers
- Voice synthesizers

H & E Computronics Inc.
50 N. Pascack Road
Spring Valley, NY 10977
914-425-1535
- Disks
- Floppy disk drives
- Hard disk drives

Heart of Texas Computer Systems Inc.
1900 E. Randol Mill Road, Suite 114
Arlington, TX 76004
817-274-5625
- Acoustic modems
- Add-on/add-in memories
- Cables
- Cassette recorders
- Controllers, interfaces
- CRT terminals
- Direct-connect modems
- Disks
- Floppy disk drives
- Hard disk drives
- Joysticks, paddles
- Monitors
- Multiplexers
- Plotters
- Printer buffers
- Printer ribbons
- Printer terminals
- Printers

Nat Hellman Inc. Computer Associates
400 S. Beverly Drive Suite 214
Beverly Hills, CA 90212
213-273-0133
- Keyboard dust covers

ICM Industries
10529 Connaught Dr.
Carmel, IN 46032

317-872-4827
- Add-on/add-in memories
- Cables
- Direct-connect modems
- Printers

IJG Inc.
1953 W. 11th St.
Upland, CA 91786
714-946-5805
- Floppy disk drives
- Printers

Individual Systems Inc.
P.O. Box 343
Downers Grove, IL 60515
312-968-2337
- Complete systems

Interface Inc.
7630 Alabama Ave.
Canoga Park, CA 91304
213-341-7914
- Cables
- Controllers, interfaces
- Disks
- Floppy disk drives
- Hard disk drives

J and M Systems Ltd.
137 Utah, NE
Albuquerque, NM 87018
505-265-5072
- Add-on/add-in memories
- Floppy disk drives

JMC Software Distributors
1025 Industrial Dr.
Bensenville, IL 60106
- Cassettes

JMR Electronics Inc.
19205 Parthenia St., Unit H
Northridge, CA 91324
213-993-4801
- Add-on/add-in memories
- Cables
- Controllers, interfaces
- CRT terminals
- Disks
- Floppy disk drives
- Hard disk drives
- Monitors
- Printer ribbons
- Printers
- Voice synthesizers

Khadin and Company
1420 W. Shaw #B
Fresno, CA 93711
209-221-1118
- Disks
- Printer ribbons

Kogyosha Company Ltd.
179 Riveredge Road
Tenafly, NJ 07670
201-569-8769
- Monitors
- Printer buffers
- Printers

Krell Software
1320 Stony Brook Road
Stony Brook, NY 11790
516-751-2474
- Add-on/add-in memories

Laredo Systems Inc.
2264 Calle de Luna
Santa Clara, CA 95050
408-980-1888
- Controllers, interfaces
- Hard disk drives

Leading Edge Products Inc.
225 Turnpike St.
Canton, MA 02021
800-343-6833
- Acoustic modems
- Cables
- Direct-connect modems
- Disks
- Printer ribbons
- Printers

Libra Laboratories Inc.
495 Main St.
Metuchen, NJ 08840
201-494-2224
- Cables
- Connectors
- Controllers, interfaces
- Multiplexers

Lindbergh Systems
41 Fairhill Road
Holden, MA 01520
617-852-0233
- Acoustic modems
- Direct-connect modems

Matchless Systems
18444 S. Broadway
Gardena, CA 90248
213-327-1010
- Cables
- Floppy disk drives
- Printers

Mayday Software
P.O. Box 66
Rock Creek Road
Phillips, WI 54555
715-339-3966
- Cassettes
- Direct-connect modems
- Disk boxes
- Disks
- Head cleaning kit
- Joysticks, paddles
- Printer ribbons
- Printers

Meca
56677 Sunset Ave.
Yucca Valley, CA 92284
619-365-7686
- Digital tape systems

MedComp Inc.
142 Crescent St.
Brockton, MA 02402
617-583-4480
- Cables
- Connectors
- Disks
- Floppy disk drives
- Hard disk drives
- Printers

MicroCompatible Inc.
3810 Oakcliff Ind. Ct.
Doraville, GA 30340
404-447-4805
- Controllers, interfaces
- Printer buffers

Micro Data Supplies
22295 Euclid Ave.
Euclid, OH 44117
216-481-1600
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- Direct-connect modems
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- Hard disk drives
- Joysticks, paddles
- Monitors
- Plotters
- Printer buffers
- Printer ribbons
- Printer terminals
- Printers

Micro-Design
6301 Manchaca, Suite J
Austin, TX 78745
512-441-7890
- Add-on/add-in memories
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- Controllers, interfaces
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- Floppy disk drives
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Micro-80 Inc.
2665 N. Busby Road
Oak Harbor, WA 98277
206-675-6143
- Cassettes
- Disks

Micro-Grip Ltd.
3164 Dumbarton Ave.

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San Bernardino, CA 92404
714-864-6643
- Friction feed kit for Epson printers
- Printers

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2803 Thomasville Road E
Cairo, GA 31728
912-377-7120
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- Bulk erasers
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- Cassettes
- Digitizers
- Direct-connect modems
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- Floppy disk drives
- Hard disk drives
- Joysticks, paddles
- Monitors
- Plotters
- Printer buffers
- Printer ribbons
- Printer terminals
- Printers

Micro Software
205 Dumaine Court, #105
Ft. Walton Beach, FL 32548
904-862-5588
- Disks
- Printer ribbons
- Printers

MTS Enterprises
P.O. Box 596
Niceville, FL 32578
904-678-3328
- Cables
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- Floppy disk drives
- Power strips
- Printer ribbons
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National Software Marketing Inc.
4701 McKinley St.
Hollywood, FL 33021
305-625-6062
- Uninterruptible power system

NC Software
7216 Boone Ave. N
Minneapolis, MN 55428
612-533-8862
- CRT terminals
- Direct-connect modems
- Printers

Nocona Electronics
600 E. Hwy. 82
Nocona, TX 76255
817-825-4027
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Omikron Systems
11127 Hearst St.
Berkeley, CA 94702
415-845-8013
- Add-on/add-in memories
- Cables
- Converters

P. Tree Enterprises
2701C W. 15th St., Suite 269
Plano, TX 75075
214-867-5656
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- Disks
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Mission, TX 78572
512-581-2765
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- CRT terminals
- Digitizers
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- Hard disk drives
- Joysticks, paddles
- Monitors
- Multiplexers
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- Printer terminals
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Pion Inc.
74 Appleton St.
Arlington, MA 02174
617-648-1717
- Solid state disk emulators

Rabco Enterprises
806 Freedom Circle
Harleysville, PA 19438
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1330 N. Glassell, Suite M
Orange, CA 92667
714-997-4950
- Controllers, interfaces
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Radio Ranch Inc.
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Polo, IL 61064
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- Cassettes
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- Digitizers
- Direct-connect modems
- Disks
- Floppy disk drives
- Hard disk drives
- Joysticks, paddles
- Monitors
- Multiplexers
- Plotters
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- Printer ribbons
- Printer terminals
- Printers
- Satellite data receivers
- Voice synthesizers

Rainbow Software Services Ltd.
7070B Farrell Road SE
Calgary, Alberta, Canada T2H 0T2
403-253-6142
- Acoustic modems

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Grand Island, NY 14072
716-773-2519
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P.O. Box 336
Maynard, MA 01754
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Woodland Hills, CA 91364
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141 Harvard Ave.
Tacoma, WA 98466
206-565-8483
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Newton Lower Falls, MA 02162
617-237-7695
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General purpose device control

Tech Data
3251 Tech Drive N.
St. Petersburg, FL 33702
800-237-8931
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Universal Software Applications Inc.
13001 Cannes
St. Louis, MO 63141
314-878-1277
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Van Horn, TX 79855
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Detroit, MI 48219
313-538-1112

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- Digitizers
- Direct-connect modems
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- Monitors
- Printer ribbons
- Printers

Voicetech Industries
Box 499, Ft. Hamilton Station
Brooklyn, NY 11209
212-680-3093

- Voice synthesizers

VR Data Corp.
777 Henderson Blvd.
Folcroft, PA 19032
800-345-8102

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Williams Enterprises
3101 Cheverly Ave.
Cheverly, MD 20785
301-773-3015

- Printers

Windham Software Inc.
29 Ivanhill St.
Willimantic, CT 06226
203-456-3530

- Floppy disk drives
- 3M products

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- Amflex Products & Services
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- Bi-Tech Enterprises
- Cheever Microware
- Computer Center
- Computer Services of Danbury
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- Leading Edge Products Inc.
- Lindbergh Systems
- Micro Data Supplies
- Micro Management Systems Inc.
- Nocona Electronics
- Pan American Electronics
- Radio Ranch Inc.
- Rainbow Software Services Ltd.
- Seneca Electronics

Add-On/Add-In Memory

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- Alamo Computer
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- Apparat Inc.
- Bi-Tech Enterprises
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- Computer Generated Data
- Computer Services of Danbury
- Computerware
- Coosol
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- Datacom Computer Sales & Supplies
- DLP Co.
- Duck Co.
- EAP Co.
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- Freedom Technology International
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- Heart of Texas Computer Systems Inc.
- ICM Industries
- J & M Systems Ltd.
- JMR Electronics
- Krell Software
- Lawrence S. Epstein Associates
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- Micro-Design
- Omikron Systems
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- Radio Ranch Inc.
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- Seneca Electronics

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- Freedom Technology International
- E.B. Garcia & Associates
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- ICM Industries
- JMR Electronics
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- Micro Management Systems Inc.
- MTS Enterprises
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- Pan American Electronics
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Cassettes

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- Mayday Software
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Radio Ranch Inc.
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Seneca Electronics
X L Systems

Multiplexers

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Computer Services of Danbury
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Data Technology Industries
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- Micro Software
- MTS Enterprises
- NC Software
- Nocona Electronics
- Pan American Electronics
- P. Tree Enterprises
- Rabco Enterprises
- Radio Ranch Inc.
- Rainbow Software Services Ltd.
- Sandpiper Software
- Seneca Electronics
- X L Systems

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Buyer's Guide to CoCo Upgrades and Peripherals

You bought a Color Computer, and you're pretty happy with it. But for some reason, the standard computer isn't enough. You wish it had enough memory for word processing or supported parallel instead of serial communication. You'd like a new keyboard for easier typing, or you want to add joysticks to play games. For whatever reason, you want to upgrade.

Before you can enhance your machine, however, you have to know what products are available. This buyer's guide introduces you to the world of Color Computer hardware. It surveys what's on the market and the price ranges of those products.

Some products listed here require hardware modification; others are peripherals that simply plug in to the system. Only those products designed for the Color Computer are included. Non-specific products that work with virtually any computer are excluded.

The information in this guide was supplied by manufacturers. *80 Micro* has not tested these products and does not guarantee any claims. We encourage you to research a product thoroughly before purchasing it. ■

Basic ROM/ Extended Basic

Basic ROM
$36 plus $3 shipping/handling (s/h)
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

This ROM uses Basic 1.1, and it is a plug-in chip—its installation doesn't require cutting traces or soldering. Instructions are included, as is a 90-day parts and labor warranty. No extended warranty is available.

Extended Basic ROM
$99
The Micro Works Inc.
P.O. Box 1110
Del Mar, CA 92014
619-942-2400

You can install this ROM without cutting traces or soldering. Documentation accompanies the product, as does a 90-day warranty.

***Manufacturers marked by two asterisks did not respond to our questionnaire.*

Extended Basic ROM Kit
$88 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

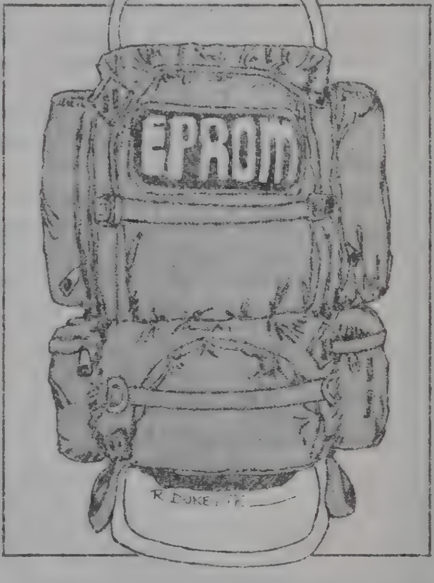
This ROM is burned into a plug-in chip; you don't need to cut traces or solder. It comes with instructions and a 90-day warranty.

****Extended Color Basic ROM Kit**
$99 (installation not included)
Radio Shack
One Tandy Center
Fort Worth, TX 76102

This ROM provides advanced graphics capabilities for your Color Computer with standard Basic. It requires a minimum of 16K.

Blank EPROM Packs

CMemory
$24.95
Micro-Labs
902 Pinecrest Drive
Richardson, TX 75080
214-235-0915



CMemory supports the 2716 EPROM chip or the 2016 or 6116 RAM chip; it doesn't contain a chip. It has 8K capacity (16K if you piggy-back the memory). The pack has a plastic case and uses EPROMs or RAM or both in 2K blocks. It occupies unused address space and $C000-$DFFF. Instructions are included along with a 90-day warranty.

CMemory-16
$34.95
Micro-Labs

902 Pinecrest Drive
Richardson, TX 75080
214-235-0915

Enclosed in a plastic case, this pack doesn't include an EPROM chip but it supports the 2732 chip. It has 16K continuous memory beginning at $C000, divided into from one to four 4K blocks of EPROM. Instructions and a 90-day warranty are included.

MultiMemory Board
$30 plus $7.50 for the case
Control Craft Inc.
19270 North Hills Drive
Brookfield, WI 53005
414-784-9027

An EPROM chip is not included in MultiMemory, but the board supports the 2516, 2716-5V, 2532, 2732, and 2564 EPROM chips as well as the 2016, 4016, and 6116 RAM chips. The board's capacity is 6 chips or 16K—whichever is greater. It lets you use static RAM as well as an EPROM (type D or earlier) provision for the write-protect switch.

You can replace jumpers with DIP switches. MultiMemory has a gold-plated edge connector and comes with sockets for memory and decoupling caps. Quantity discounts are available. Installation instructions and a 90-day warranty are included.

ROMless Pak I
$24.95
The Micro Works Inc.
P.O. Box 1110
Del Mar, CA 92014
619-942-2400

ROMless Pak I comes in a plastic case and includes a PC board with sockets and discrete components installed. An EPROM chip is not included, but the pack supports the 2716 or 2732 chip, and it has a capacity of 8K. Instructions are included; the hardware has a 90-day parts and labor warranty.

ROMless Pak II
$29.95
The Micro Works Inc.
P.O. Box 1110
Del Mar, CA 92014
619-942-2400

ROMless Pak II is a bare board in a plastic case. Although it doesn't include a chip, it supports the 2716 EPROM chip on the 6116 RAM chip. The product has a capacity of up to 12K ROM or RAM. Instructions are included. The PC board is guaranteed to be free from defects and it has a 90-day parts and labor warranty.

Cooling Fans

CoCo Cooler
$49.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

CoCo Cooler is an internal cooling system that cools chips, especially the heat-prone SAM chip. A 90-day warranty covers the product.

Color Fan
$34.95
Atomic City Electronics
3195 Arizona Ave.
Los Alamos, NM 87544
505-662-3200

Color Fan, a 20CFM fan, cools the Color Computer's interior. It is 3 inches in diameter and mounts under the keyboard. Installation instructions are in-

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cluded, as well as a 30-day money-back guarantee and a 90-day parts and labor warranty.

Disk Controllers

Atomtronics Disc Controller Board
$274.95 without video
$349.95 with video
Atomic City Electronics
3195 Arizona Ave.
Los Alamos, NM 87544
505-662-3200

The Atomtronics Disc Controller Board controls four 5¼-inch disk drives and uses the 2793 controller chip. It uses the FLEX operating system and doesn't read Radio Shack Color Computer disks. The DOS must be loaded from disk. A formatted 5¼-inch disk (double-sided, double-density, 80-track disk) has 720K capacity.

The controller includes a parallel printer port, a real-time clock, and an optional 80-by-24-character video display. It mounts inside the Color Computer's case, and installation instructions are included. A 30-day money-back guarantee and a 90-day parts and labor warranty cover the controller.

Disk Interface
$199.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

The Disk interface controls four 5¼-inch disks and uses the 1793 controller chip. Using Radio Shack's DOS, it reads Radio Shack Color Computer disks but not Model I/III disks. The DOS is stored in ROM, and formatted disks have a capacity of 165K. The product comes with a two-drive cable, a cartridge, and an owner's manual. It's covered by a 90-day warranty.

TG-99 The Alternative
$159.95 CCMD + 9
$199.95 EXTMD9
Cer-Comp
5566 Ricochet Ave.
Las Vegas, NV 89110
702-452-0632

The Alternative controls four 5¼-inch disk drives (single- or double-sided, any mix of 35-, 40-, or 80-track drives). It doesn't read Radio Shack Color Computer disks. The product uses the CCMD + 9 or EXTMD9 operating systems stored on a 4K or 8K EPROM pack.

A 5¼-inch formatted disk has 175K RAM of user space in a single-sided 35-track drive and 350K RAM in a double-sided 35-track drive. In a single-sided 40-track drive, the disk has 200K RAM and in a double-sided 40-track drive, it has 400K RAM. The 80-track single-sided drive provides 400K, and the double-sided drive has 800K.

The EXTMD9 is Extended Disk Basic compatible, has on-error handling, an on-screen clock, a full-featured DOS, and a built-in Debug machine-language monitor. Time and date variables are maintained for Basic in string and numeric forms. Installation instructions and a 90-day hardware warranty are included.

EPROM Programmers

EPROM Programmer
$105
Control Craft Inc.
19270 North Hills Drive
Brookfield, WI 53005
414-784-9027

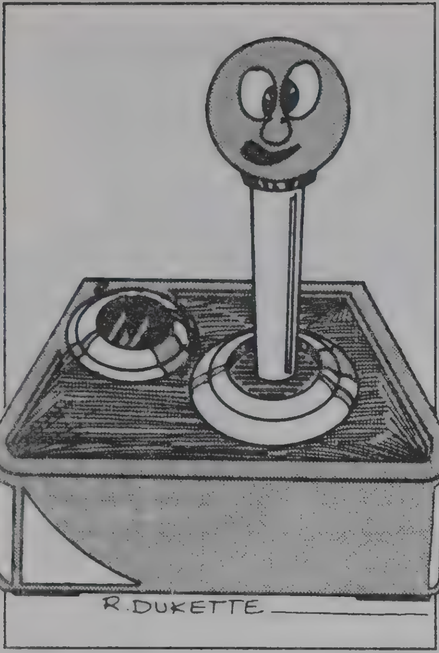
This programmer plugs into the game pack port and lets you produce programs on EPROM. The programmer is self-contained with software on board—no external power supply is needed. It can program the 2716, 2732, 2764, 2516, 2532, and 2564 5-volt EPROMs. Instructions and a 90-day warranty are included.

The Spectrum EPROM Programmer
$99.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

With this programmer, you can program the 2716 and 67864 EPROMs. You can write your own version of Basic or modify regular, Extended, or Disk Basic. Instructions are included, as well as a 90-day warranty.

Joysticks, etc.

Colorcade Super Joystick Module
$19.95
Colorware Inc.
78-03 Jamaica Ave.
Woodhaven, NY 11421
212-647-2864



This module interfaces an Atari joystick (or equivalent) to the Color Computer. It allows electronic rapid fire with variable speed control. The module also serves as a six-foot joystick extender. It comes with instructions and a 90-day parts and labor warranty.

Command Control Adaptor
$17.95
WICO Corporation
6400 West Gross Point Road
Niles, IL 60648
312-647-7500

This adapter works for switch-type joysticks. It includes a circuit board, but its installation doesn't require cutting traces. It has two 9-pin female input plugs and two two-foot adapter cords with 5-pin DIN plugs. Installation instructions are included, as is a one-year limited warranty (you must return the adapter to WICO with $3 and proof of purchase).

Command Control Analog Joystick
$49.95 each
WICO Corporation
6400 West Gross Point Road
Niles, IL 60648
312-647-7500

The Analog Joystick has spring return and a fire button on the stick, and its six-leaf switch design is the same as arcade models. Other features include a steel shaft handle, four non-slip pads, and a five-foot cord. The joystick comes complete with instructions and a one-year limited warranty (you must return it to WICO with $3 and proof of purchase).

Command Control Track Ball
$69.95
WICO Corporation
6400 West Gross Point Road
Niles, IL 60648
312-647-7500

This arcade-type track ball has steel shaft bearings, a phenolic ball, light encoder wheels, and two optical encoders. It has a limited one-year warranty (you must return it to WICO with $3 and proof of purchase).

Double Stick Interface
$19.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

With this interface, you can hook up two Atari-type joysticks to the Color Computer. An extra-long cable for direct plug-in to two joystick ports comes with the product. Instructions and a 90-day warranty are also included.

Endicott Joystick
$19.95 each/$37.95 for two
Endicott Software
P.O. Box 12543
Huntsville, AL 35802
205-881-0506

A potentiometer-type joystick, the Endicott Joystick measures four inches by 2 3/8 inches by four inches and weighs four ounces. It is free-floating, and the fire button is on the base. It has a six-foot cord and plugs in—no modification or adapter is needed. Instructions and a 90-day replacement or repair warranty are included.

****Jarb Dual Joystick**
$35.95 each
Jarb Software Inc.
1636 D Avenue, Suite C
National City, CA 92050
619-474-6213

The Dual Joystick, a potentiometer joystick, has both units assembled in one box. It has two cables, two fire buttons, and two shafts. The fire buttons are on the base. Installation instructions, a text program, and a 180-day warranty are included.

Kraft Joystick
$64.95 each
Kraft Systems
450 W. California Ave.
Vista, CA 92083
619-724-7146

This is a potentiometer-type joystick

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that can be either free-floating or have a spring return—you choose with a switch. The fire button is on the base. Sample programs are not included, but instructions and a full one-year warranty are.

****Radio Shack Joystick
$24.95 per pair
Radio Shack
One Tandy Center
Fort Worth, TX 76102**

Radio Shack's Joystick has 360-degree movement and a single-shot button. An instruction sheet is included.

**Spectrum Joystick
$39.95 each plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807**

This free-floating joystick is a potentiometer. The "soft-touch" fire button is on the base. The joystick has a red LED power on/off indicator, and its cable is nine feet long. The Spectrum Joystick has a 90-day warranty.

Keyboards

**Premium Keyboard
$89.95
Micronix Systems Corp.
#7 Gibralter Square
St. Charles, MO 63301
314-441-1694**

The Premium Keyboard has 57 keys, four of which are special-function keys. It does not have a separate numeric keypad. You must install the keyboard, but cutting wires and soldering joints isn't required. The keyboard has Alps key switches and a low profile, and it is laid out like the Radio Shack keyboard. Special driver software is included, as are instructions and a 90-day limited warranty.

**Replacement Keyboard
$149
Level IV Products
32429 Schoolcraft Road
Livonia, MI 48150
800-521-3305**

Level IV Products installs this keyboard externally. It is an Alps keyboard in a Model I bezel. The keyboard has 65 keys (none of which is a special-function key) and a separate numeric keypad. Its cable plugs into the left side of the machine, and the reset button works with this keyboard. Documentation and a 90-day warranty are included.

**Word Processing Keyboard
$89.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807**

The Word Processing Keyboard has 57 keys, including four special-function keys. It doesn't have a separate numeric keypad. The keyboard is a direct plug-in replacement and must be installed inside the computer; you don't have to cut wires or solder joints. The package includes software for user-definable keys, plus instructions and a 90-day warranty.

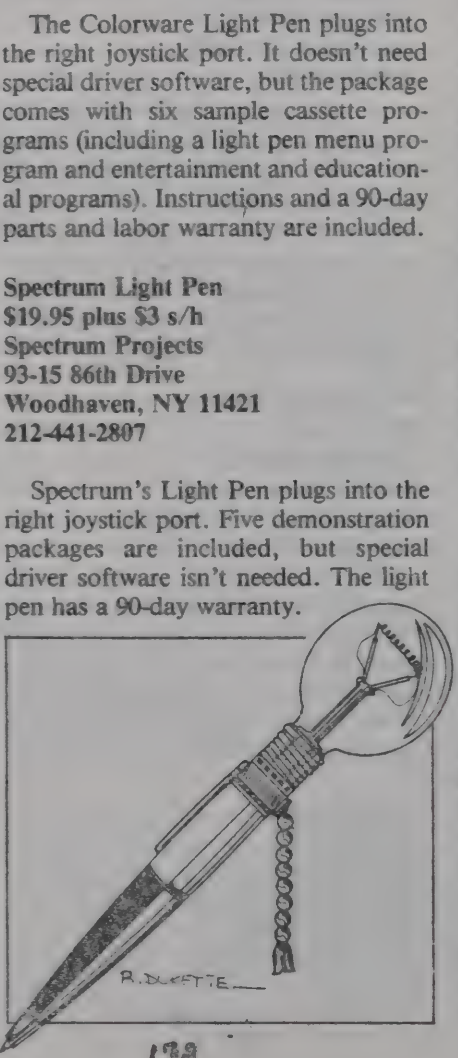
Light Pens

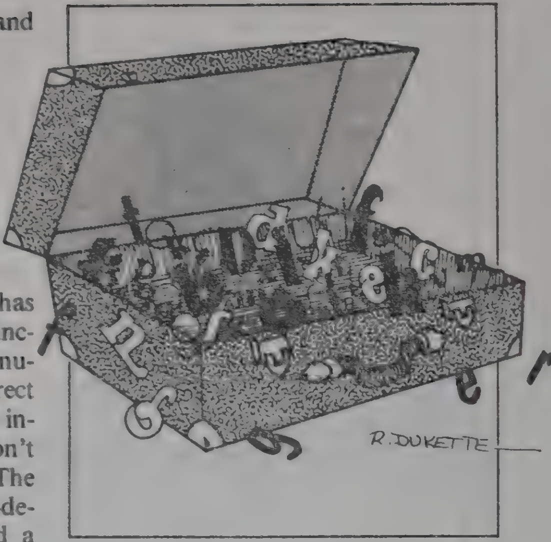
**Colorware Light Pen
$19.95
Colorware Inc.
78-03 Jamaica Ave.
Woodhaven, NY 11421
212-647-2864**

The Colorware Light Pen plugs into the right joystick port. It doesn't need special driver software, but the package comes with six sample cassette programs (including a light pen menu program and entertainment and educational programs). Instructions and a 90-day parts and labor warranty are included.

**Spectrum Light Pen
$19.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807**

Spectrum's Light Pen plugs into the right joystick port. Five demonstration packages are included, but special driver software isn't needed. The light pen has a 90-day warranty.





Lowercase Kits

**LCA-47
$75
Micro Technical Products Inc.
123 N. Sirrine, Suite 106
Mesa, AZ 85201
602-834-0283**

The LCA-47 provides true descenders, has a fast, bipolar character generator ROM, and is compatible with 80C software. You can remote two on-board switches—an enable/disable switch and a black-on-green/green-on-black switch. Installation takes about five minutes; cutting traces and soldering aren't required. Installation instructions are included, as is a one-year parts and labor warranty.

**Lowercase Kit
$69.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807**

The Lowercase Kit has a direct, plug-in circuit board. It supplies true descenders and can be installed in about five minutes—cutting traces or soldering are not required. Installation instructions and a 90-day warranty are included.

**Lowerkit
$79.95
Green Mountain Micro
Roxbury, VT 05669
802-485-6112**

Lowerkit provides true descenders and has optional Kata Kana, Greek, APL, math symbols, and generalized European characters. Special character sets can be programmed on request, and character-creation software is available. The kit is a plug-in module; cutting traces and soldering are unnecessary. Installation takes about a minute, and instructions and an unconditional six-month warranty are included.

Parallel Printer ROM Packs

BT-1010 Parallel Printer Port
$79.95 plus s/h
Basic Technology
1500 Kent Road
Ortonville, MI 48462
313-627-6146

The BT-1010 is a plug-in, self-decoded cartridge with a provision for changing the port address location. It has a five-foot cable with a Centronics connector, and it provides an 8-bit port. The pack is user-programmable with an option for other computer-programmable printer controls or inputs. A machine-language driver is included on a tape that is disk-loadable and position independent. A user's manual with operating and installation instructions, schematics, parts lists, and parts layout diagrams is included, as well as a 180-day full parts and labor warranty.

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8510 Prowriter Serial	559
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1550 Serial	749

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COMREX-CRI	825
SILVERREED	629
NEC 3510	1499
Interfaces with Cables	69

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714-662-1425

244

CPrint
$39.95
Micro-Labs Inc.
902 Pinecrest Drive
Richardson, TX 75080
214-235-0915

You must initialize CPrint via software (EXEC 49152). CPrint provides an 8-bit port and is fully buffered, has printer-driver software in ROM, and a fully buffered bidirectional port. It provides a Centronics-type parallel port and has all normal printer commands. You can set line width and page length, and a blank line is automatically inserted between pages. Instructions and a 90-day warranty are included.

RAM Chips

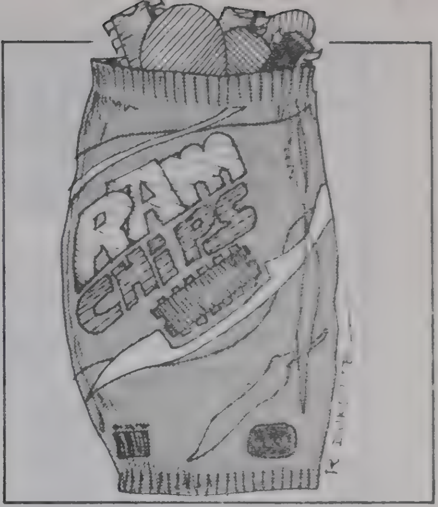
4K–16K Memory Upgrade Kit
$39.95
The Micro Works Inc.
P.O. Box 1110
Del Mar, CA 92014
619-942-2400

This kit turns your Color Computer into a 16K machine. It has plastic RAM with no circuit board; installation doesn't require cutting traces or soldering. Various companies manufacture the RAM, and access time is 200 nanoseconds. Installation instructions are included, and the integrated circuits come with a warranty.

4K–16K RAM Upgrade
$15.95
American Small Business Computers
118 S. Mill St.
Pryor, OK 74361
918-825-4844

This plastic RAM upgrades your computer from 4K to 16K. It has no circuit board, and installation doesn't require cutting traces or soldering. Access time is 200 nanoseconds. Installation instructions and a 180-day warranty are included.

16K RAM
$12 for eight
Total Access
P.O. Box 790276
Dallas, TX 75379
214-458-1966



This product upgrades your computer to 16K; the RAM is either plastic or ceramic and does not include a circuit board. Cutting traces and soldering aren't needed for installation. Access time is 200 nanoseconds. The chips are guaranteed for one year.

16K RAM Chips
$29
Level IV Products
32429 Schoolcraft Road
Livonia, MI 48150
800-521-3305

This ceramic RAM is manufactured by NEC. A circuit board is not included. Cutting traces and soldering might be required, depending on your revision board. Access time is 150 nanoseconds. The upgrade is FLEX compatible. Internal upgrade instructions are included, but the chips do not come with a warranty.

****16K RAM Upgrade Kit**
$49 (does not include installation)
Radio Shack
One Tandy Center
Fort Worth, TX 76102

This kit converts your 4K RAM Color Computer to 16K.

16K–32K Memory Upgrade Kit
$39.95
The Micro Works Inc.
P.O. Box 1110
Del Mar, CA 92014
619-942-2400

With this kit, you can upgrade your 16K RAM computer to 32K RAM. The plastic RAM is made by various manufacturers, and the kit does not include a circuit board. Access time is 200 nanoseconds. Installation instructions are included, and you will have to cut traces and solder. The integrated circuits are warranteed.

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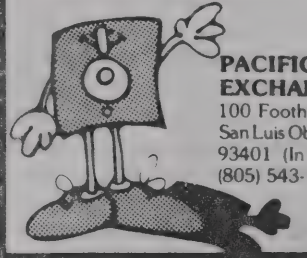

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BIGMEM kit includes 64K RAM chips, A&T controller, cable, solder and instructions ($180). VCXM disk ($34). Utility software disk ($20). Get all three ($224). 64K CP/M 2.2 ($119). USA shipping included. NYS add tax.

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32K RAM
$34.95
B.T. Enterprises
10B Carlough Road
Bohemia, NY 11716
516-567-8155

NEC and AMD manufacture these 32K RAM chips. Access time is 150 nanoseconds. A 30-day warranty covers the product.

32K RAM Chips
$79
Level IV Products
32429 Schoolcraft Road
Livonia, MI 48150
800-521-3305

This ceramic RAM is manufactured by NEC. It doesn't include a circuit board; cutting traces and soldering might be required, depending on your revision board. Access time is 150 nanoseconds. The upgrade is FLEX compatible. Internal upgrade instructions are included, but the chips aren't covered by a warranty.

****32K RAM Kit**
$149 (does not include installation)
Radio Shack
One Tandy Center
Fort Worth, TX 76102

With this kit, you can convert your 4K or 16K RAM Color Computer to 32K RAM.

64K Chips
$49.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

These chips upgrade the Color Computer to 64K RAM. Hitachi, Motorola, or NEC manufacture the RAM, which is either plastic or ceramic. A circuit board isn't included, and installation requires cutting traces or soldering on some versions of the Color Computer. Access time is 200 nanoseconds. Installation instructions and a 90-day warranty are included.

64K Memory
$48 for eight
Total Access
P.O. Box 790276
Dallas, TX 75379
214-458-1966

This product turns your computer into a 64K machine. The RAM is plastic or ceramic and does not have a circuit board; cutting traces or soldering is unnecessary. Access time is 200 nanoseconds. The chips are guaranteed for one year.

64K Memory Upgrade
$64.95
The Micro Works Inc.
P.O. Box 1110
Del Mar, CA 92014
619-942-2400

This upgrades your Color Computer to either 32K or 64K RAM. Various companies manufacture this plastic RAM. Access time is 150 nanoseconds. The upgrade doesn't have a circuit board, and installation doesn't require cutting traces. The 64K upgrade requires minimal soldering on some versions of the Color Computer. Installation instructions for the upgrade and a warranty for the integrated circuits are included.

64K RAM Chips
$96
Level IV Products
32429 Schoolcraft Road
Livonia, MI 48150
800-521-3305

OKI manufactures this ceramic RAM. The chips do not include a circuit board; cutting traces and soldering might be required, depending on your revision board. Access time is 200 nanoseconds. The upgrade is FLEX compatible. Internal upgrade instructions are included, but the chips aren't covered by a warranty.

Atomtronics RAM Expansion
$75 (RAM only)
$44.95 (Adapter card)
$54.95 (Wolfbug)
Atomic City Electronics
3195 Arizona Ave.
Alamos, NM 87544
505-662-3200

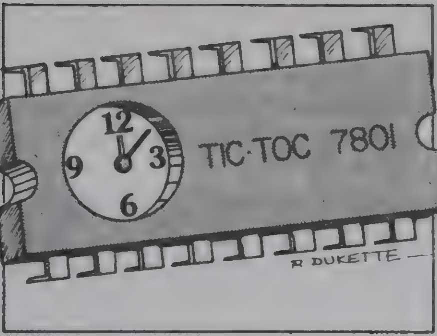
This product expands your computer to 64K. Motorola manufactures the plastic RAM. A circuit board for C & D boards is included ($44.95). Installation doesn't require cutting traces but does require soldering. Access time is 200 nanoseconds. The C & D series boards require an adapter card. The Wolfbug monitor allows use of 64K with 1.0 series ROMs. Installation instructions, a 30-day money-back guarantee, and a 90-day parts and labor warranty are included.

Grand Slam
$74.95
DSL Computer Products Inc.
P.O. Box 1113
Dearborn, MI 48121
313-582-8930

Grand Slam lets you upgrade from 16K RAM to 64K. The RAM is ceramic, and the product does not include a circuit board. You will have to cut some capacitors, but soldering isn't needed. You need an E or F board and a 1.1 ROM. Installation takes about a half hour. Access time is 150 nanoseconds. Installation instructions, diagrams, and a full one-year warranty are included.

RAM Slam
$49.95
DSL Computer Products Inc.
P.O. Box 1113
Dearborn, MI 48121
313-582-8930

This ceramic RAM lets you upgrade from 16K to 32K RAM. RAM Slam doesn't include a circuit board, and its installation doesn't require cutting traces or soldering. Installation instructions are included, and installation should be completed within 15 minutes. Access time is 150 nanoseconds. RAM Slam has a full one-year warranty.



Saddle Set
$39
$54 including color diagnostic tape
Computerware
4403 Manchester Ave., Suite 102
Encinitas, CA 92024
619-436-3512

Saddle Set lets you upgrade a 16K RAM Color Computer to 32K. Several manufacturers make the RAM, which is either plastic or ceramic. No circuit board is included, and installation doesn't require cutting traces or soldering. Access time is 200 nanoseconds. Installation instructions and a 90-day warranty are included.

Real-Time Clocks

BT-1020 Real Time Clock/Calendar
$109 plus s/h
Basic Technology
1500 Kent Road
Ortonville, MI 48462
313-627-6146

Installing this real-time clock doesn't require cutting traces or soldering; you just plug in the cartridge. It is fully user-software programmable, has a battery back-up, and is self-decoded with jumper-selectable address alternatives. It features the day, data, time, 100-year calendar, alarm interrupt, time interrupt, and 50 bytes of keep-alive RAM memory. It also compensates for daylight savings time and leap years. Basic and position-independent machine-language programs are included on tape but are also disk-loadable.

The user's manual includes operating and installation instructions, complete schematics, parts lists, and parts layout diagrams. A 180-day parts and labor warranty covers the product.

CoCo CooCoo
$79.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

The real-time clock uses the PIA port and has a battery back-up. It is accessible via software and includes date information. Although cutting traces isn't required, soldering is. Installation instructions are included, as well as a 90-day warranty.

ROM Pack Port Extenders

Disk Interface/ROM Pack Extender
$29.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

Installing this extender doesn't require cutting traces or soldering. The product provides one port and has gold-plated connectors that prevent corrosion. The extender has a 90-day warranty.

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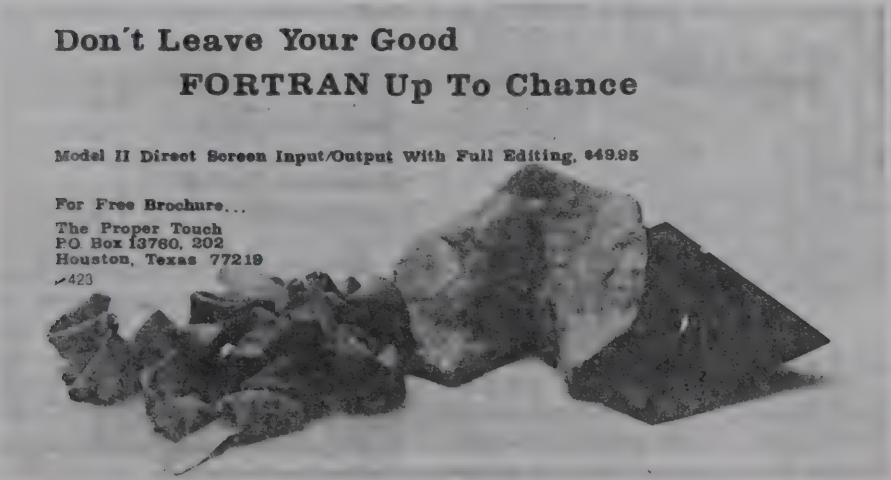
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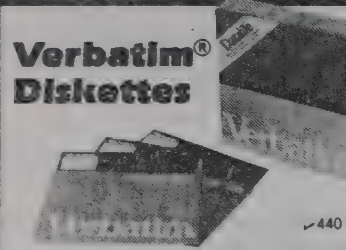

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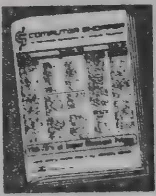

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The Solution
$249.95
Frank Hogg Laboratory Inc.
770 James St., Suite 215
Syracuse, NY 13203
315-474-7856

This ROM pack port extender provides five extra ports. You don't have to cut traces or solder to install it. It has a 2K/4K EPROM socket with a 4K monitor EPROM. The monitor has a built-in FLEX boot, 64K memory access circuit, and a tracking power supply. The package doesn't contain cards. Installation instructions and a 90-day warranty are included.

The Spectrum Switcher
$99.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

The Switcher provides two ports and its installation doesn't require cutting traces or soldering. It lets you switch between a ROM pack and a disk controller without having to turn off or unplug the machine. The Switcher also lets you dump ROM packs to tape or disk with an auto-start switch. It comes with instructions and a 90-day warranty.

Y-PAK Dual Port Adapter
$70
TJN Systems
765 Rt. 83, Suite 111
Bensenville, IL 60106
312-860-5525

The Y-PAK doesn't require cutting traces or soldering. The dual-port adapter lets you select an automatic start feature in ROM cartridges. If the auto-start is turned off the cartridge is still readable. Documentation is included.

Serial-to-Parallel Converters

CCP-1 Serial to Parallel Printer Interface
$69
Botek Instruments
4949 Hampshire
Utica, MI 48087
313-739-2910

The CCP-1 doesn't require initializing software. It is Centronics compatible and can be configured as a 7-bit or 8-bit port. It has a switch-selectable baud rate from 300 to 9600, and all necessary cables are included. The converter comes with installation instructions and a one-year warranty.

Epson—Color Computer Interface
$49.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

This interface need not be software-initialized. It provides an 8-bit port and is Centronics compatible. It fits directly into the Epson MX-80 and FX-20 printers; it doesn't need a Radio Shack cable or an external power supply. Instructions and a 90-day warranty included.

PI80C Parallel Printer Interface
$69.95
The Micro Works Inc.
P.O. Box 1110
Del Mar, CA 92014
619-942-2400

The PI80C is Centronics compatible and doesn't have to be software-initialized. It can be configured as a 7-bit or 8-bit port. You must supply the printer cables. Instructions and a 90-day parts and labor warranty are included.

Serial to Parallel Converter
$69
Level IV Products
32429 Schoolcraft Road
Livonia, MI 48150
800-521-3305

This converter is Centronics compatible and provides an 8-bit port. It transmits data at up to 9600 baud. Up to 600 baud, you need do nothing as far as software is concerned. For 4800–9600 baud, you must do a quick Basic POKE that is included in the documentation. At 9600 baud, data is transmitted eight times faster than with an Epson printer alone. The converter comes with documentation and a 90-day warranty.

SPC-CC
$69 plus $4 s/h
Binary Devices
11560 Timberlake Lane
Noblesville, IN 46060
317-842-5020

SPC-CC is Centronics compatible and provides a 7-bit or an 8-bit port. You don't have to initialize it via software. Baud rates of 300, 600, 1200, 2400, or 4800 are available. Installation instructions, a 10-day money-back guarantee, and a 90-day warranty are included.

Miscellaneous

Analog Interface

CCAD Analog Interface
$169.50
Technical Hardware Inc.
P.O. Box 3609
Fullerton, CA 92634
714-870-1882

This interface is a 12-bit analog-to-digital converter that digitizes 16 different analog inputs, performs timed operations, controls three outputs, and formats data. It has two uncommitted pre-amplifiers, is user-friendly, and plugs into a user port. It has a real-time clock and an analysis frequency of 83 milliseconds to 16 hours. The interface includes a complete, documented software package for use as a data-logger system. Instructions and a 90-day replacement warranty are included.

Bubble Memory

Color Bubble
$600 (tentative)
Green Mountain Micro
Roxbury, VT 05669
802-485-6112

Due out soon, Color Bubble is a 1-megabit (128K byte) bubble memory system. It comes with the BOSS (Bubble Operating System Software), and fits inside the Color Computer's case. Average access time for a program or data is under ¼ second. Bubble storage is non-volatile—programs aren't lost when the power fails, and no battery back-up is required. It's removable and provides high security for sensitive data. Documentation and a six-month unconditional warranty are included.

Buffer

Smartbuffer
$335 and up
Data Match Corp.
3810 Oakcliff Ind. Court
Doraville, GA 30340
404-441-0408

The Smartbuffer is a print buffer/interface and a serial-to-parallel converter. It adds up to a 256K RAM to the computer (user upgradable to 128K; factory upgradable to 256K). It includes a circuit board, but its installation does not require cutting traces or soldering. Smartbuffer is a stand-alone unit with up to eight input/output ports.

As a serial-to-parallel converter, it is Centronics compatible and provides either a 7-bit or 8-bit port. You don't have to initialize it with software. It converts serial to parallel or vice versa and converts baud rates, protocols, character bit lengths, and stop bits.

Smartbuffer is also a temporary storage device for printers, plotters, and modems, and it buffers output or input data. Multiports let you connect several computers with several printers. Installation instructions, a six-month parts and labor warranty, and a two-year parts warranty cover the Smartbuffer.

Cassette Controller

Softrol Cassette Recorder—LSS-2
$19.99
Lemons Tech Services
P.O. Box 429
Buffalo, MO 65622
417-345-7643

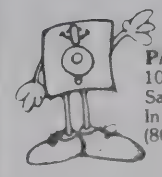
Softrol is a solid state cassette motor controller. It provides fingertip control of the cassette and suppresses surges from switching that put hits on a taped program. Its one-second motor turn-off delay eliminates tape pinch by pulling the end of the program past pinch roller/capstan pressure. This delay puts a silent gap between programs on the tape, making program location easier.

Delay can be disabled if needed, such as for transmitter keying. You can use Softrol to switch any 5–10 volt dc load up to 1.5 amperes, either positive or negative ground. The unit uses no battery or line cord—it receives its power from the tape recorder. The product comes with a money-back guarantee.

Cassette System

TC-8C High-Speed Cassette System
$129.95
JPC Products Co.
12021 Paisano Court NE
Albuquerque, NM 87112
505-294-4623

The TC-8C is a two-port high-speed (3000 baud) cassette system that records and loads programs in half the time of the standard Color Computer system using the standard Radio Shack tape recorder. It has two independent software-selectable cassette ports. It has high data reliability, heavy-duty motor control relays, and a spare EPROM socket (2K or 4K). Instructions, a 30-day money-back guarantee, and a 90-day full warranty are included.



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Canada
514-843-3961

The Blackbox lets you transmit programs over telephone lines without a modem. Any Basic, machine-language, or data program can be transmitted from one Color Computer to another.

Expansion Interface Unit

BT-1000 Expansion Interface Unit
$270 plus s/h
Basic Technology
1500 Kent Road
Ortonville, MI 48462
313-627-6146

This parallel bus expansion unit plugs into the Color Computer's expansion unit. It features five expansion slots; a buffered plug-in cable; internal +5 volt, +12 volt, and −12 volt 16-watt power supply; internal memory decoding; and four 24-pin RAM/EPROM sockets. The user's manual includes operating and installation instructions, complete schematics, parts lists, and parts layout diagrams. The 180-day warranty covers parts and labor.

Extension Interface

Extension Interface
$79.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

The Extension Interface brings the Color Computer's rear jacks to a central control center. It has a printer/modem switch, LED, power indicator, and motor on/off control for the tape recorder. A 90-day warranty covers the interface.

Gold Plug

Gold Plug 80
$9.95 each/$54.95 for six
E.A.P. Co.
P.O. Box 14
Keller, TX 76248
817-498-4242

This gold plug eliminates contact problems with tin or lead card-edge connectors. Installation instructions are included. If you feel unqualified to install the plug, you can return it for a refund if unused.

Input/Output Port

I/O Port
$59.95
Green Mountain Micro
Roxbury, VT 05669
802-485-6112

The I/O Port is an 8-bit cartridge that interfaces the Color Computer to the real world. It can be used with ROM packs or the TRS-80 disk system; it comes with a three-foot cable and 3M style header connector. Documentation and an unconditional 90-day warranty are included.

Interface Port

BT-1030 Versatile Interface Port
$69.96 plus s/h
Basic Technology
1500 Kent Road
Ortonville, MI 48462
313-627-6146

This interface port is a fully self-decoded plug-in cartridge with provision for changing the address location. It is fully programmable, has two 8-bit parallel ports, four control lines, two 16-bit timer/counters, and a serial shift register. The user's manual contains operating and installation instructions, complete schematics, parts lists, and parts layout diagrams. A 180-day full parts and labor warranty is included.

Inverted Video

Inverted Video Upgrade
$32
Level IV Products
32429 Schoolcraft Road
Livonia, MI 48150
800-521-3305

Level IV Products installs this upgrade for you. The upgrade modifies the Color Computer so green characters appear on a black screen rather than vice versa. The work is covered by a 90-day warranty.

Morse Code Translator

Morse-Pak
$79.95
Atomic City Electronics
3195 Arizona Ave.
Los Alamos, NM 87544
505-662-3200

This Morse Code translator pack turns the Color Computer into a terminal for Morse Code communication. It allows code speeds up to 60 wpm and has .75 amp transmit relay. A parallel printer port is included. Instructions, a 30-day money-back guarantee, and a 90-day warranty come with the pack.

Multi-Function Product

ColorMate
$495
Computer Systems Distributors
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$79.95 plus $3 s/h
Spectrum Projects
93-15 86th Drive
Woodhaven, NY 11421
212-441-2807

This external, 12-digit numeric keypad allows easier number entry. It plugs into the right joystick port and comes with a free machine-language driver. Instructions and a 90-day warranty are included.

Parallel Bus Expansion Unit

BT-2000 Companion
$249.95 plus s/h
Basic Technology
1500 Kent Road
Ortonville, MI 48462
313-627-6146

The BT-2000 is a switchable, parallel bus expansion unit that plugs into the Color Computer cartridge slot. It has five expansion slots, each of which is individually selectable by keyboard control, by program control, or by a pushbutton switch on the front of the unit. LEDs on the front panel tell you which slot is activated. Cold start reset gives you control of the computer from a locked-up condition without turning off the computer. The unit has a +5 volt power supply and a buffered plug-in cable. The user's manual has operating and installation instructions, complete schematics, parts lists, and parts layout diagrams. A 180-day full parts and labor warranty covers the product.

Prototyping Board and Enclosure

Proto-Pak
$34.95
Atomic City Electronics
3195 Arizona Ave.
Los Alamos, NM 87544
505-662-3200

Proto-Pak includes a four-inch by four-inch prototyping board and plastic box designed to fit into an expansion port. The board is epoxy glass. Each hole has a gold-plated pad and a ground plane. Circuit examples and installation instructions are included. A 30-day money-back guarantee and a 90-day parts and labor warranty cover the product.

Serial Line Analyzer

Serial Line Analyzer
$199
Control Craft Inc.
19270 North Hills Drive
Brookfield, WI 53005
414-784-9027

This product turns the Color Computer into a piece of test equipment. It plugs into the ROM pack port of the Color Computer and operates with all size memories. As an error-checker, it checks odd parity, even parity, no parity, framing error, data overrun, DCD high, and if the DCD changed since the last character. An instruction manual and a 90-day warranty are included.

Terminal Program Pack

Communication Pack
$69.95
Atomic City Electronics
3195 Arizona Ave.
Los Alamos, NM 87544
505-662-3200

The Communications Pack adds a 6850 ACIA serial port with terminal software in ROM. It lets you use a standard port to drive the printer while using the added port to communicate at up to 19.2K baud. It has a standard DB25 connector. Instructions, a 30-day money-back guarantee, and a 90-day parts and labor warranty are included.

Video Monitor Interface

Video Plus
$24.95
Computerware
4403 Manchester Ave., Suite 102
Encinitas, CA 92024
619-436-3512

Video Plus connects the Color Computer to a composite video monitor—color or monochrome. Video Plus lets you fine-tune for each monitor and computer, and it works with every motherboard revision. It does not disable the TV interface, so you can change from monitor to TV and back. An audio hook-up is available for monitors with sound. Installation requires no soldering, and instructions and a 90-day warranty are included. ■

TWO YEARS OF RAINBOW

*An Index to the Articles, Reviews and Authors Appearing in **the Rainbow** From July 1981 Through June 1983*

Compiled and Edited
by
Leslie A. Foster

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